

DOCUMENT RESUME

ED 129 405

95

PS 008 726

AUTHOR Holmberg, Margaret C.; And Others
TITLE The Experimental Analysis of Preschool Teachers' Behaviors. Final Report.
INSTITUTION Kansas Univ., Lawrence. Kansas Center for Research in Early Childhood Education.
SPONS AGENCY National Coordination Center for Early Childhood Education, St. Ann, Mo.; Office of Education (DHEW), Washington, D.C. Bureau of Research.
PUB DATE Oct 72
NOTE 121p.; Not available in hard copy due to marginal legibility of original document
EDRS PRICE MF-\$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Behavior Change; Case Studies; *Early Childhood Education; *Peer Relationship; *Preschool Children; *Preschool Teachers; Reinforcement; Social Relations; Student Teacher Relationship; *Teacher Behavior; Teacher Education; *Training
IDENTIFIERS Kansas

ABSTRACT

The report is in three parts. Part A is entitled "What Helps Teachers Teach - An Experimental Analysis" and covers the topics: What Do Teachers Do? Single Procedures That Train Teachers and Those That Don't. A Three Procedure Training Package. When the Package Fails...Who Records the Behaviors? Do Training Results Maintain? This section is accompanied by numerous charts and graphs. Part B is a master's thesis entitled "An Experimental Analysis of a 3-Part Training Procedure for Teachers and Its Effect on Increasing a Preschool Child's Peer Interaction in Specific Classroom Activities." Part C, "Case Studies in Teacher Training," deals specifically with priming and reinforcing child peer interaction by the teacher.
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Interim Report

FINAL REPORT

for

Project # 3GOK07

Holmberg, Thomson, and Baer
Principal Investigators



THE KANSAS CENTER FOR RESEARCH
IN EARLY CHILDHOOD EDUCATION
DEPARTMENT OF HUMAN DEVELOPMENT
University of Kansas

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THE EXPERIMENTAL ANALYSIS OF PRESCHOOL TEACHERS' BEHAVIORS

Margaret C. Holmberg*, Carolyn L. Thomson, Donald M. Baer
Elizabeth M. Goetz, and Wilma J. Holt

University of Kansas

October, 1972

Final Report to Kansas Center for Research in Early Childhood Education
National Program on Early Childhood Education of CEMREL
U.S. Office of Education, Bureau of Research

The Experimental Analysis of Preschool Teachers' Behaviors

This report represents the compilation of data from the Holmberg, Thomson, and Baer KCRECE grant and presents the final and most recent analysis of the procedures to train preschool teachers. Part A of this report is being written for a chapter to be included in Experimental Analysis of Early Childhood Behavior by J.M. LeBlanc, B.C. Etzel, and D.M. Baer. A portion of the paper was presented at Division 25 Informal Paper Session at the September, 1972 annual meeting of the American Psychological Association in Honolulu, Hawaii. This part of the report summarizes previous work in teacher training by the authors, presents results from the combining of training procedures previously analyzed singly, presents data from alternative training procedures added to assure the successful training of teachers, and stresses the necessity of having daily records of teacher behavior in order to monitor progress.

Part B was submitted as a Master's thesis by Janice J. Vogel July 31, 1972. The paper presents the results of the combined training procedures and calls for procedures to train teachers to arrange and modify the environment to effect child behaviors.

Part C is a series of case studies (not necessarily conducted under an experimental design) in which teacher behavior was recorded and a training procedure was implemented. Graduate students conducted the studies during a summer session. Behaviors of teachers were changed, however, the independent variable was not shown to be the controlling variable in every case. Still the daily measures of teacher behaviors were shown to be important in order to successfully change the behaviors.

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PART A

What Helps Teachers Teach - An Experimental Analysis

Margaret C. Holmberg, Carolyn L. Thomson
Elizabeth M. Goetz, and Wilma J. Holt

WHAT HELPS TEACHERS TEACH

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What Do Teachers Do?

Single Procedures That Train Teachers and Those That Don't

A Three-Procedure Training Package

When the Package Fails...

Who Records the Behaviors?

Do Training Results Maintain?

What Helps Teachers Teach?

What Do Teachers Do?

Since 1964 the number of children enrolled in preprimary education programs has been rising. Forty-one percent of the 10,959,000 children aged three to five in the United States were enrolled in a preprimary program in 1970.¹ This percent is contrasted with 37 percent enrolled in 1969, 33 percent enrolled in 1968, and 25 percent enrolled in 1964. The rate of increased enrollment for 3's, 4's, and 5's from 1964 to 1970 shows that the number of 3's and 4's enrolled is climbing more rapidly than the numbers of 5's (150 percent increase for 3's, 63 percent increase for 4's, and 27 percent increase for 5's over the seven year time span). While the total population of these groups is declining (12,496,000 in 1964 to 10,950,000 in 1970) the total numbers of children enrolled is increasing (3,187,000 in 1964 to 4,516,000 in 1970) as well as the percentage of children enrolled increasing. The enrollment has steadily risen since 1964 and indications are that the trend will continue with the increased numbers of and support for day care centers. Another prediction is that the Bureau of Census will be compiling similar figures for two and one year olds and infants. The addition of these very young children in educational programs will increase even further the numbers of young children who need teachers.

The teachers of children currently in preprimary programs have little similarity in background or training. Less than half the states have certification procedures for persons and of those that do such verification of training frequently is not required for employment except by the public schools. In 1968 a Federal Panel on Early Childhood Education formulated two general inter-agency requirements for teachers of preschool children in programs federally funded (Katz):

- (1) Educational activities (in day care facilities) must be under the supervision and direction of a staff member trained or experienced in child growth and development,
- (2) Persons providing direct care for children in the facility must have had training or demonstrated ability in working with children (Federal Interagency Day Care Requirements, 1968, p. 9).

Such requirements become difficult to meet considering the shortage of people with preschool education training and the equally critical shortage of training personnel and institutions. For centers which emphasize the hiring of target area personnel who often have no training, the problem magnifies. For those persons the training must be in-service training. Regardless of whether the training is acquired in formal academic environments or whether it is acquired through in-service programs, the issue is that training is critically needed and the need promises to increase as the numbers of children in programs increase and the age span widens.

These people hired in preschool centers must teach. Teaching means doing something which will result in children doing more, different, or improved skills (activities, behaviors). Teaching means doing something that effects children in a way the teacher has judged (decided) is positive, productive, and important. Two requirements are made of teachers, therefore; to determine what the positive, productive, and important behaviors of children are; and to determine how to produce those behaviors.

What to teach is generally based on personal values influenced by and developed from societies needs, public school demands, parental requests, and teacher interests. More and more books describing curricula for young children are being published, each promoting and praising a variety of behaviors and characteristics to teach young children -- often with little empirical evidence that those skills and traits are related to future requirements. Training teachers to know and to decide what to teach will be a more objective task once

the elements of stimulus control and curriculum evaluation are defined.

Chapters _____ in this book are directly related to these issues.

How to teach is the other problem for those working in early childhood centers. It is in this area that a little more "science" is evident. Until recently, however, even this aspect of teacher training was largely characterized by telling teachers what to be (kind, warm, understanding, generous, resourceful, flexible...) as opposed to helping them know what to do. This procedure may have been appropriate for a time when there were few students, few teacher trainers, and few places for them to teach. If the teachers were not well trained at least few children were harmed since few were enrolled in the programs. When numbers increase, however, quality becomes more evident and to transfer quality demands precision. It, therefore, behooves trainers of teachers to be precise and specific in helping teachers teach, particularly when those teachers will be teaching other teachers and teaching increasingly more young children.

A number of chapters () in this book in referring to child behaviors reveal that the timing and in some cases the content of teacher attention is the controlling variable for many child behaviors. Particularly for young children social attention from an adult is a potent stimuli to evoke or reinforce desired child behaviors. An adult has a built-in teaching device, portable and ready to use at any time. This chapter will deal with helping teachers maximize the effects of their attention. In doing so the variables which control the teachers' behaviors will be isolated and a case will be made for an objective record of what teachers do and how often they do it.

Single Procedures That Train Teachers and Those That Don't

Cooper, Thomson and Baer (1970) established a format for analyzing the acquisition of attending skills by teachers. The dependent variable in this case was the attention of teachers contingent upon appropriate child behaviors.²

Upon demonstrating a low rate of attending to appropriate behaviors the teacher was given feedback at the end of every ten minutes as to the number of times she had attended to appropriate child behaviors. The feedback was given by the observer recording the data. For two teachers each time the feedback procedure was installed the rate of attending increased. Subsequent procedure analyses have included a concurrent measure of child behaviors. Thus the mechanism for analyzing a training procedure involved defining the teacher behaviors, defining the child behaviors, observing the rate of occurrences, determining and applying a training procedure.

Work reported in Hopkins (1972) by Holmberg et al analyzed the results of seven separate training procedures. Three procedures dealt with giving teachers help prior to their interactions with children. These procedures were observing master teachers, completing assignments, and being cued to specific child behaviors. Observing master teachers was accomplished by (1) learning the definitions of behaviors on which the teacher was being observed and then observing systematically the master teacher or by (2) watching other teachers from the observation booth looking for examples of specified behaviors but not recording them. Completing assignments required the teacher to list examples of specified child behaviors and of teacher behaviors which would produce those child behaviors. The list was reviewed by the master teacher after which the teacher would try the examples while teaching, making notes of responses following her or his behaviors. Being cued to specific child behaviors was done by either the observer recording data or by the master teacher. The cue was a head nod or voice cue to the teacher to attend to specified child behaviors at that time.

Four procedures involved giving consequences for particular interactions with children. Observer feedback was information given to the teacher by the

observer about the amount of behavior the teacher had emitted with a certain time interval. Graph feedback required the teacher to view the tabulated and plotted data of his or her behavior at the end of each day. On-the-spot feedback required the teacher to wear a hearing aid device in her/his ear through which the master teacher could be heard privately via a wireless microphone in the observation booth. The master teacher prompted and reinforced specified teacher behaviors. Self counting required the teacher to wear a wrist golf counter or to carry a hand counter which accumulated the number of behaviors emitted each time the counter was depressed.

All procedures produced some success with some teachers. However no one procedure was successful with every teacher nor was always successful in maintaining the desired teacher behavior. The problem then was how to decide what procedures to use to help teachers acquire skills of priming and attending to specified child behaviors.

One route to answering this question would be to determine in some way during baseline which training procedure would most likely work with that teacher. Such a prediction would require spending much time developing categories of behavior that were generally compatible with those behaviors of teachers who were successful under one procedure -- almost returning to characterizing teachers and looking at who they are rather than what they do -- exactly what the research was designed to avoid. Another method might be taking a guess as to which procedure to try first which if unsuccessful would mean continuing with procedures until one was successful. This could be time wasting and could potentially produce a long history of failure for the teacher.

A feasible, practical, and sure approach seemed to be to combine those procedures judged by the investigators to be economical, efficient, and had

been demonstrated to produce fairly good results singly. Of the seven procedures four were eliminated as probably successful combinations. Observing master teachers did not appear to be a good use of teacher time since the effects were short lived.³

bug Cuing required doubling the teaching staff in one area, not practical if staff were at a premium or an observer were not sophisticated in handling data and teachers. A sophisticated observer would also be necessary to deliver the feedback and such a person could not always be relied upon to observe and to cue simultaneously. The on-the-spot feedback procedure was at the outset expensive and also over the semester became unpleasant or aversive for the teacher as judged by the discontinuing increases in behaviors when the device was worn extensively. One teacher increased her behaviors under the verbal procedure. "If you can do it alone you don't have to wear the bug."

On the other hand, writing assignments required planned responses from the teacher -- responses of defining the child behavior and procedures to increase and maintain that behavior. Viewing a graph of these behaviors daily would tell the teacher if, in fact, he or she was successful in emitting those behaviors. While these two procedures alone were never successful with all teachers they each added an element to the learning paradigm SD-R-SR; the assignment providing the discriminative stimuli, the teacher responding, and the graph giving the feedback.

Insert Figure 1

Figure 1 shows the effects of the assignment procedure in increasing three teachers' behaviors. The teacher behaviors measured were attending⁴ to children who were engaged in peer social interaction. Each time the assignment was given to a teacher the rate of reinforcement rose. Teacher EP after 18 days of baseline demonstrated four high rate days of reinforcement.

Simultaneously a child's rate of peer interaction increased. When the teacher purposely reduced her attention to interaction the child's rate of interaction decreased to baseline levels. Upon returning to the reinforcement procedure the child's and the teacher's rates returned to high levels.

Similar results occurred with Teacher SH and her child. After 29 days of baseline the assignment was written and checked and resulted in increased rates of peer interaction behavior for the child and reinforcement rates for the teacher. A third sequencing with Teacher SR demonstrated the effects of the reinforcement assignment after 42 days of baseline.

Insert Figure 2

Figure 2 shows the results of the same assignment procedure when applied to a second teacher behavior, that of priming a specified child behavior to occur. Priming was defined as suggestions, statements, or requests made by the teacher which would engage the child in the desired behavior. Teacher SH was priming a child to increase his verbalizations⁵ to adults and/or children. An increase in the teacher's priming behavior produced a simultaneous increase in the child's verbal behavior which maintained even when the teacher's priming rate began to decline.

Teacher EP in the lower graph shows a similar increase in her priming behaviors after completing the assignment to define and emit primes to children which would result in peer interaction. This is the same teacher that appears in Figure 1. Her priming assignment followed her reinforcement assignment.

Insert Figure 3

The results of viewing graphs daily are seen with two teachers in Figure 3. After five days of baseline Teacher JW produced five out of six higher than baseline rates of combined priming and reinforcing peer interaction. A similar

effect occurred with Teacher TJ after 14 days of baseline.

Insert Figure 4.

Teacher MR in Figure 4 made no change in her priming or reinforcing behaviors when the assignments were given. However during the two conditions of viewing graphs there were increases in both behaviors. The intervening condition when the teacher did not see her graphs saw her rates drop to the previous low levels again.

Self counting was a successful procedure every time it was used singly in training.

Insert Figure 5

Figure 5 shows the results with four teachers. Each time the teachers began counting their own behaviors, they increased their rates of those behaviors. Teachers JA, EM, and KK produced simultaneous increases in child behaviors when they began counting their own behaviors.

Self counting as well as being consistently successful was an inexpensive procedure. A golf counter retails for four to six dollars. The counter is also portable. It would easily be used in any class requiring no expensive wiring or mechanical devices.

Thus the three part training package included writing assignments, viewing graphs, and counting behaviors.

A Three Procedure Training Package

The teachers in training were undergraduate or graduate students completing requirements for the state teaching certificate or the MA degree. The teacher behaviors (dependent variables) to which the package was applied were the priming of child peer interactions, the attending to or reinforcement of those

interactions, and the answering of children's questions. Answering questions was defined as a response within 20 seconds to a question asked by a child. If the daily rate of answering questions increased for a teacher it might be inferred that children were asking more questions than before, a desired child behavior.

Observations of the teachers occurred early in the semester to determine their baseline or operant rates of behaviors. The package was then introduced. The assignment was given during a conference with the investigator. During this conference the teacher was also shown his or her graphs. The behaviors graphed were defined and usually upon request of the teacher an expected or normal rate of the behavior was given by the investigator. The graphs were viewed daily thereafter. The assignment as described earlier asked the student to list examples of the defined teacher and child behaviors. Between 2 to 4 days after the assignment was given the lists were checked for accuracy by the investigator. The teacher then tried these examples in the classroom and made notes regarding responses from children. At the same time or one day later the teacher began carrying a portable counter on which he or she tabulated teacher behaviors.

Reliability of observed behaviors was obtained by a second observer recording the behaviors simultaneously but independently with the regular observer. A 10 second interval recording system was used with the observer alternating between teacher and the child (when data were taken on a single child) every four minutes.⁶ Percentages of reliability were calculated by dividing the number of agreements by the number of agreements plus disagreements. Intervals in which no behavior occurred were scored as agreements since the frequency of all behaviors recorded was high. Observer pairs were trained to an 80 percent criterion at the beginning of each study.

Insert Figure 6

In Figure 6 the three part package effect on three teachers' daily rates of answering questions is shown. After Day 4 for Teacher KL the package was introduced to increase question answering and was clearly successful. After Day 5 for Teacher MJ similar results occurred and after Day 6 for Teacher KS still another increase in behavior was observed.

Following Day 10 Teacher MJ was told not to bother about counting or looking at her graphs for a while. This removal of as much of the package as possible produced a steady downward trend. This trend was reversed however upon reinstating the counting and the viewing of graphs. Subsequently a gradual removal of counting and viewing of graphs occurred and the behavior was maintained. Points noted with an N indicate days during which MJ did not count during the fading of the package beginning Day 27. She continued to see her graph until Day 36. She again saw her graph for the last time on Day 38. On six days Teacher MJ compared her count of answers with the count obtained by the observer. When those points were plotted (noted by the dotted bars) they matched closely the curve from the observer plots.

The removal of counting and graphs occurred for Teacher KS also after Day 10. This teacher however recovered her rate without returning to counting or viewing graphs. She did not see her graphs again until Day 22. Points recorded for these teachers by the reliability observers are plotted on the figures. Percentage reliabilities from two observers were as follows: KL, 98 percent; MJ, 74, 50, 52, 77 and 86 percents; and KS, 80 and 85 percents.

Insert Figure 7

Teacher CG's answer behavior is shown in Figure 7 and resembles that of MJ in Figure 6. Following the removal of counting and viewing graphs CG's

rate of answering questions dropped and leveled at two percent a day. When she resumed counting and seeing her graphs her rates rose and maintained through counting on the fading sequence. The fading procedure consisted of alternate days only for six days then counting once every three days, then not counting or viewing graphs for the final four days. The mean rate of answering questions continued to rise during fading. Reliability for CG's data was 83 percent.

Insert Figure 8

Data from Teachers AS and TW present the effects of the three part package on the teachers reinforcement of peer interaction behavior. From both teachers an increase in reinforcement occurred upon the introduction of the package procedure. Reliabilities for these data are 85, 54, and 85 percents for Teacher AS data and 85 percent for Teacher TW data.

Insert Figure 9

Two more teachers demonstrate the effect of the package procedure. In the upper graph in Figure 9, two behaviors of Teacher KS are shown. After three days of baseline the package was applied to her reinforcement of peer interaction. A rapid, steady increase followed. Subsequently at Day 11 the package was begun for her priming of social peer interaction. While there had been a slight increase in her priming rate when she was trained to increase her attending behaviors, a further and more stable increase occurred when training was directed toward priming. Little was lost in her reinforcement behavior. In the lower graph in Figure 9, the solid line represents the reinforcement behavior of Teacher KL. The bars represent the mean peer interaction rates of a preschool child. Teacher KL had been instructed to help the child learn to interact more with her peers. An increase in both the teacher and child behaviors occurred upon the introduction of the training package with the teacher.

On Day 22 the teacher received the package to increase her priming rates. Her rate of reinforcing maintained and the child's peer interaction increased again. On Day 43 the teacher was given the training package to increase her rate of answering questions, a behavior topographically quite different from attending to peer interaction. While her rate of reinforcement did drop from her training rate it was still above her original baseline and was rising. Reliability points are indicated by the triangle on KL's data. The percentage reliability for KL averaged 78 percent ranging from 71 to 83 percents.

Insert Figure 10

Two more teachers show again the success of the package training procedures. This time the dependent variable is the teacher's priming behavior. The data are plotted in two day blocks. After Day 12 Teacher VF increased her priming rate consistent with the introduction of the package. Subsequently after Day 20 Teacher AS began her assignment, counting, and viewing of graphs. At Day 6 she had begun the procedure for her reinforcement behavior (see fig.) and a corresponding increase is noted in her priming behavior. A steady continuous increase occurred in her priming again however when the package was introduced for priming.

Teacher AS was a graduate student interested in modifying her own behaviors. She selected her own procedures and by circumstance they were the procedures proscribed for the package used to train the undergraduates.

Insert Figure 11

Teacher BS in Figure 11 instantly increased her rate of reinforcing peer interaction at Day 10 when the package procedure was begun. The rate tapered off but leveled out to an average of seven percent for the condition. When she stopped counting and stopped seeing her graph her rate dropped to zero after

reaching the highest point of the study in this condition. Upon reinstating the training package a steady rising rate of reinforcement behavior occurred. Reliability observers points are plotted on the graph. The percentages of agreement were 83, 87, 85, and 79 percents.

In summary the three part package training procedure has been used with 22 teacher behaviors and was successful in producing increased rates in 14 behaviors. Thus the problem of finding a foolproof training package still exists. The data continue to support the necessity of having daily objective data on teachers while in training.

Seven teachers were asked to plot the data from their counters when they were counting their own behaviors. The investigators hoped to find similar curves from the data recorded by the teachers and that recorded by the observers even though recording times and procedures differed. Had such a correlation materialized perhaps self counted data could be substituted for observer collected data, reducing further the cost of the training package. Four of the seven teachers did in fact count and record their counts daily. Two of the four teachers' self counting graphs corresponded closely with the observer collected data. Two other teachers graphed their counts but their points did not always vary in the same direction as the observer collected data. One teacher who counted but did not regularly graph her data did modify her behavior. Two teachers neither counted nor graphed nor changed their behaviors. Without an independent observer available their lack of progress might have gone undetected.

Further evidence in support of observer collected data are the data from three teachers whose behaviors were not altered by the package training procedure and who were not asked to plot their data. Only by monitoring the daily progress or lack of progress could the investigators know when to try alternative techniques to enable teachers to be successful.

When the Package Fails

Insert Figure-12

For Teacher MMS the alternative training procedure was the assignment of a particular child to the teacher with the statement that the child had a low rate of interaction behavior and could the teacher help the child. This procedure was part of baseline procedures for previously discussed cases (Teachers EP, SH, KL, JA, BM, and KK). While the priming behavior of Teacher MMS had increased somewhat when the package was introduced, the behavior tapered off toward the end of the condition (Days 11 to 15). When a specific child was assigned to the teacher her mean rate of priming rose to 14 percent, doubling the 7 percent mean of the package-only condition. When the teacher was told not to make an effort to prime the child but to continue to count and to look at her graphs, a return to the level of priming in the package-only condition occurred (a mean of 8 percent). The rate dropped even lower when the teacher stopped counting and stopped seeing her graph (Days 27 - 31).

Insert Figure 13

For Teacher PB the additional procedure added when the package failed was an instruction for her to deliver tokens to children when she attended to
21 and 22
their peer interaction. Teacher PB did this on Days / but the next six days her attention to peer interaction dropped again. Upon questioning the teacher about this the investigator discovered that the teacher had not put tokens on the children's rings but had merely shifted the tokens from one hand to the other. She was again instructed to give the tokens directly to the children when she attended to them. Her rates increased again. Upon discontinuing the giving of tokens the second time, however, she was able to maintain her rate of attending.⁷

Insert Figure 14

For Teachers VH and DR the alternative to the package was a conference in which the investigator asked the teachers what they thought the problem was and did they think they could demonstrate that they had their priming behaviors under control. Both teachers made increases over their long baseline rates following the discussion. This alternative procedure was successful in increasing reinforcement rates for a third teacher.

Insert Figure 15

Teacher DMI was given a modification of the assignment procedure. The instructions were to develop daily lesson plans that would allow for and promote peer interaction. This began on Day 25 and produced the three highest points for reinforcement (Days 28 - 30).

Another teacher almost missed a training experience that modified her teaching posture. Even though the investigator had been in the classroom with the teacher for 12 weeks, she had not been aware of the amount of time the teacher was standing when talking with children or when helping them with tasks. Not until the investigator spent time in the observation booth did she note that the teacher was rarely at the children's eye level. A brief count of standing behavior for 3 days by the investigator showed that the student was on her feet 70 to 80 percent of the time observed.

Insert Figure 16

Upon showing the points to the teacher and discussing the convenience to both the teacher and the child of being at eye level, the teacher immediately reduced her daily standing rate to 10 percent.

Who Records the Behaviors?

Had no observer data been available to the investigators these teachers might have been unaware of their deficiencies. Even if the investigators hunched that the behaviors were not being emitted, conferences with the teachers would have pitted investigator hunches against teacher hunches if the teacher thought that he or she was emitting the behavior. Such a situation is not conducive to effective teaching or learning.

Defined and measured behaviors are necessary in order to demonstrate that teachers have abilities to work with young children, a requirement for preschool teachers suggested by a Federal Panel that was mentioned earlier. The demonstration of abilities should then be required of teachers whether they are trained at a training institution or are trained in-service. Providing evidence of acquired skills will necessitate a staff of persons to collect (record and measure) data. Baer recommends that a pool of observers be available to the teaching staff also to measure the progress (or lack of progress) of the children in the classes. Observer records would be a signal to teachers when to continue with successful procedures and when to change procedures because of their ineffectiveness.

For training institutions observers could come from observation classes in colleges or universities where credit is given for their observation time. The students in training could be taught to observe each other which might in itself be a training procedure worth investigating. Staffing budgets that allow for the hiring of hourly help could also pay for observers. For Center budgets which do not allow for hiring persons to work as observers other sources of money might be explored. Teen employment programs could be tapped for personnel. Parents who work regularly at the centers might take on observing functions. Regular volunteers could serve as the observing staff. What is critical is that the observers become a part of the teaching staff and that

they recognize the important contribution that they are making to the training and development of both teachers and children.

Do Training Results Maintain?

A final issue regarding the training of teachers should be discussed. Do the acquired behaviors carry over to other teacher behaviors and to other settings in which the teachers teach? Data presented earlier for Teachers AS and KS (Figs.) suggest that other behaviors do increase simultaneously with the training of one behavior. These data support the data presented in Hopkins which demonstrate that when reinforcement behaviors directed to a single child increase, reinforcement directed to all children increases also.

Insert Figure 17

Other evidence of maintenance of behavior comes from Teacher JA who was observed in three different settings: two settings at the training institution and another setting where JA was teaching three mornings a week. Additionally her attention to a single child's verbal behavior was recorded as well as her attention to all children's verbal behaviors. Training occurred in one setting only (Inside) and to one child only. As shown in Fig. 17 her reinforcement of verbal behavior of the child increased under the counting procedure in the training setting (Inside). The rate of reinforcement of all children's verbal behavior also increased in the training setting. Therefore the teacher did apply the procedure she was learning with one child to all the children in her class. Teacher JA's behavior maintained in the second setting where no training occurred (Inside, heavy lines) and maintained in the second teaching setting (broken lines) again where no training occurred. A drop in rate does appear to be occurring in the second teaching setting however. More data are needed to examine the carry over effects of students' acquired behaviors

in the training setting to their teaching settings.

For teachers who are trained during in-service programs the problem of carry over may not exist. Existing data do support the training of teachers in the setting in which they teach. Holmberg et al (Hopkins) found that pre and post data obtained from employed teachers/^{in their home settings} before and after a six week training session at a university were not greatly different even though rates of behavior increased at the training site. Such training might have been conducted successfully had the procedures occurred at the teacher's home centers. Thus the problem of carry over could have been avoided.

Figure 1 shows the percent of reinforcement for peer interaction across days for three teachers before and after the sequential application of the reinforcement assignment procedure. The rates of teacher SH are of her reinforcement to a target child. The percent of peer interaction across days for two target children are graphed with Teachers EP and SH. The arrows indicate the points at which the reinforcement assignment was in effect.

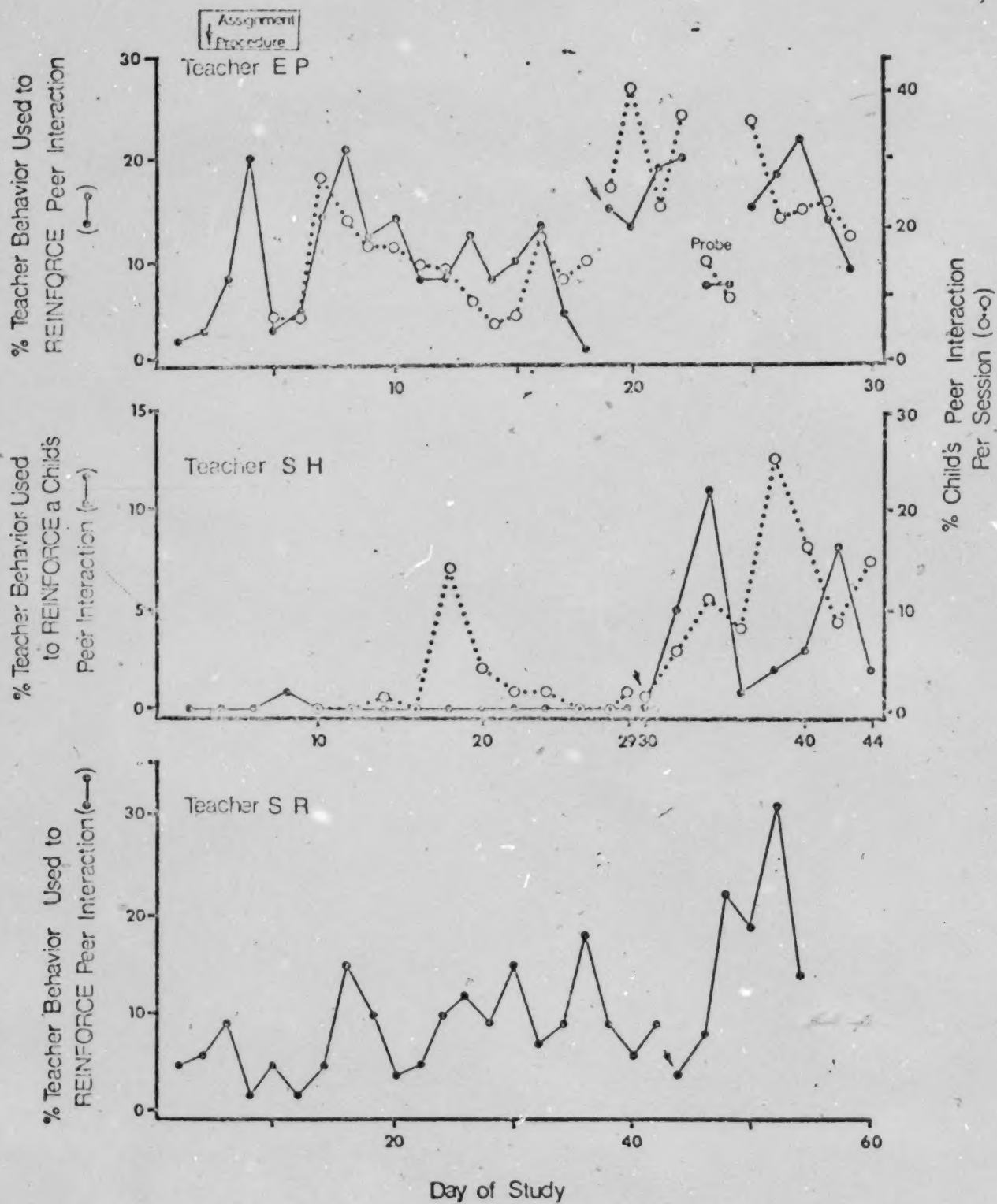


Figure 2 shows the percent of teacher behavior used to prime child behavior for two teachers before and after the sequential application of the priming assignment. The percent of child behavior across days for the two target children are graphed with Teachers SH and EP. The arrows indicate the points at which the priming assignment was in effect.

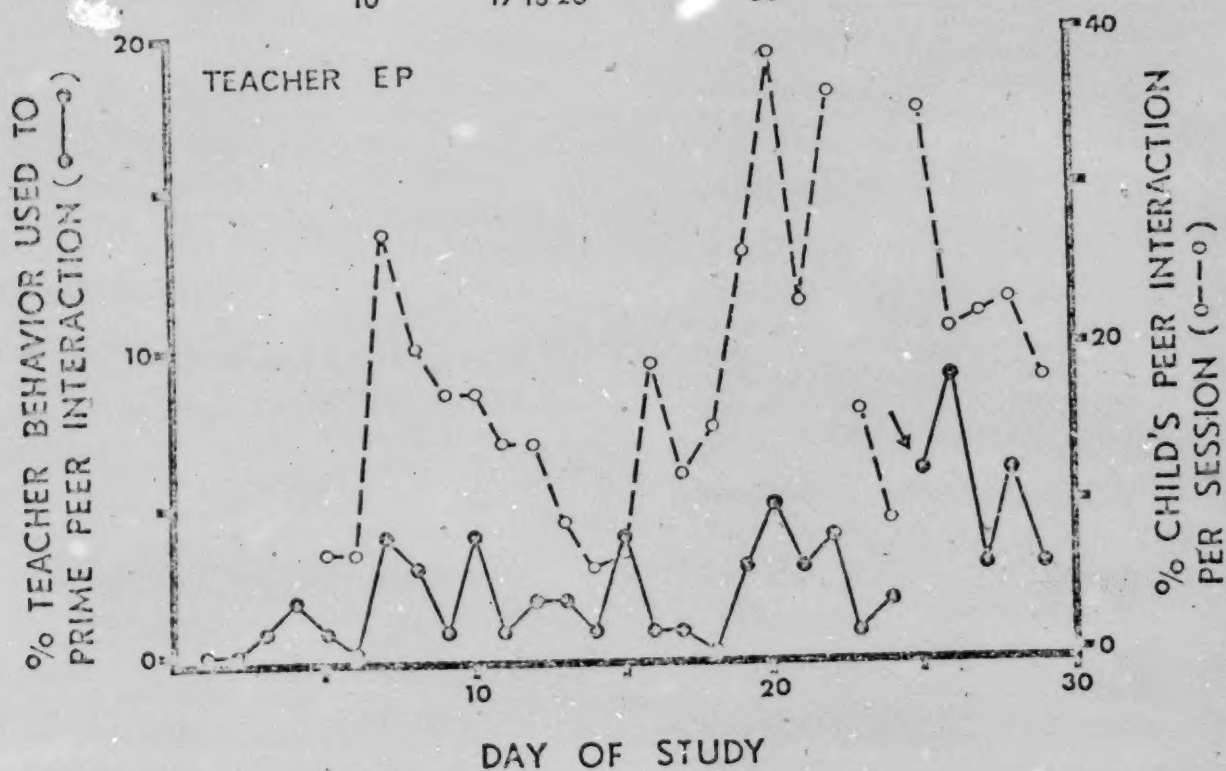
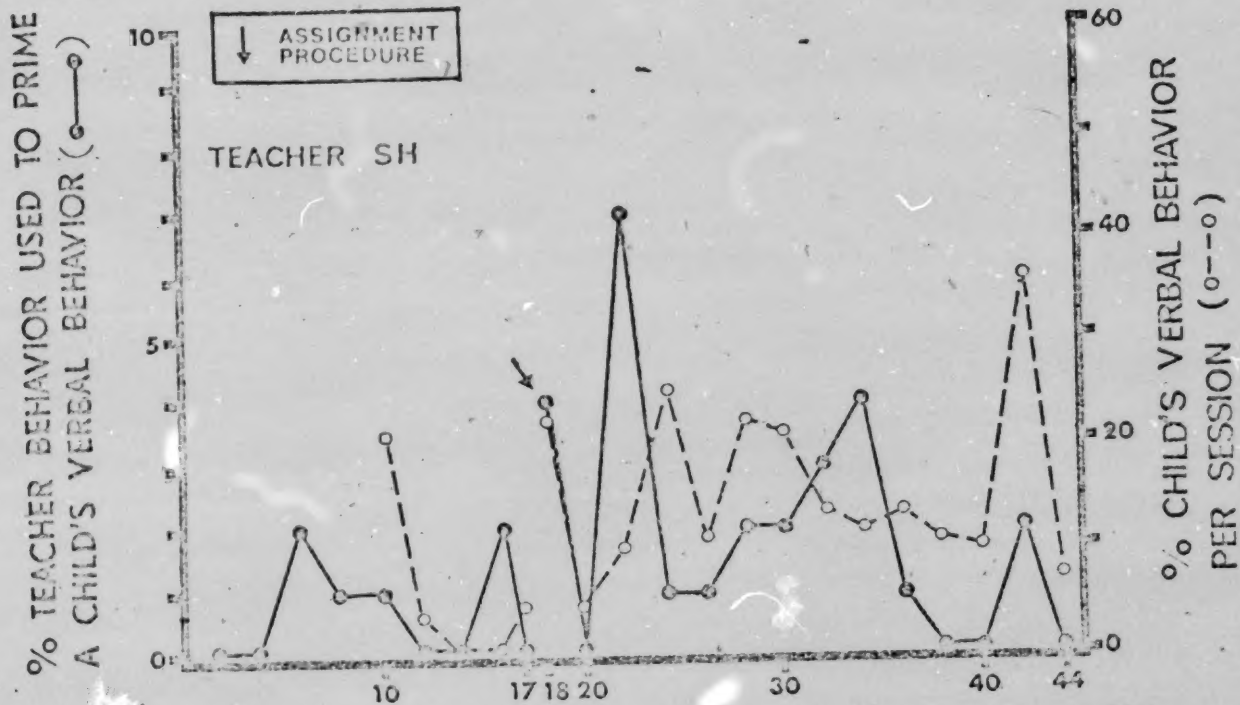
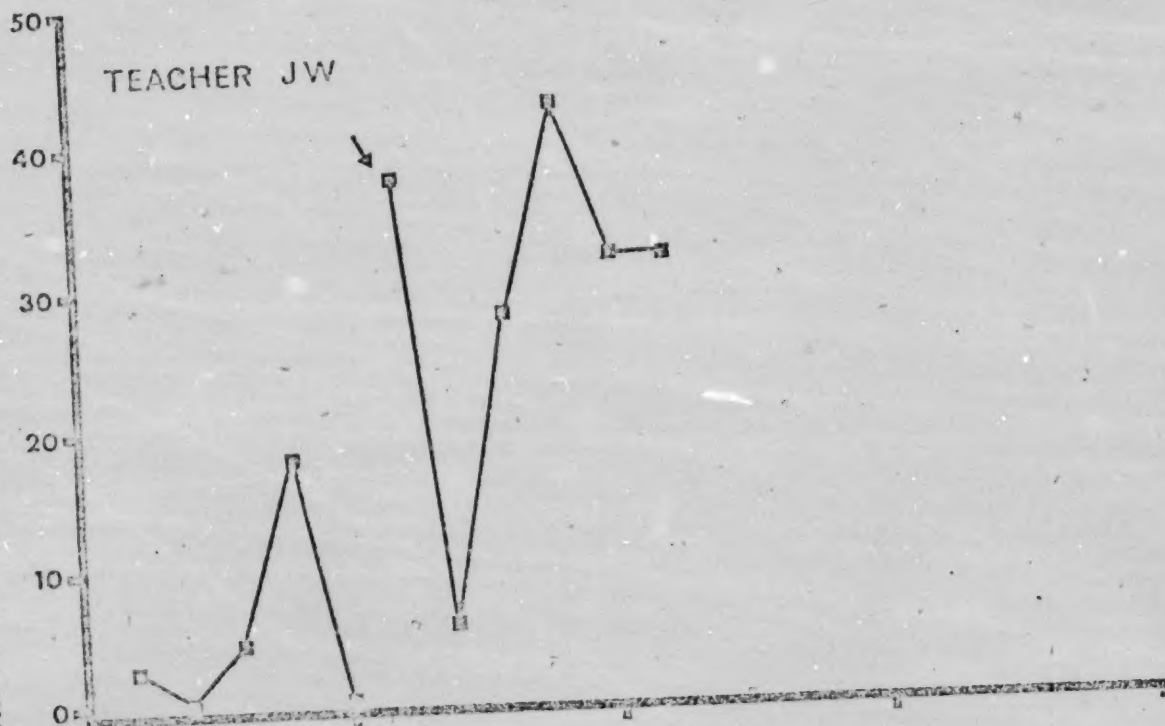


Figure 3 shows the daily percents of teacher behavior used to prime and reinforce peer interaction for Teacher JM and TJ before and after the Seeing-Own-Graph procedure was in effect.

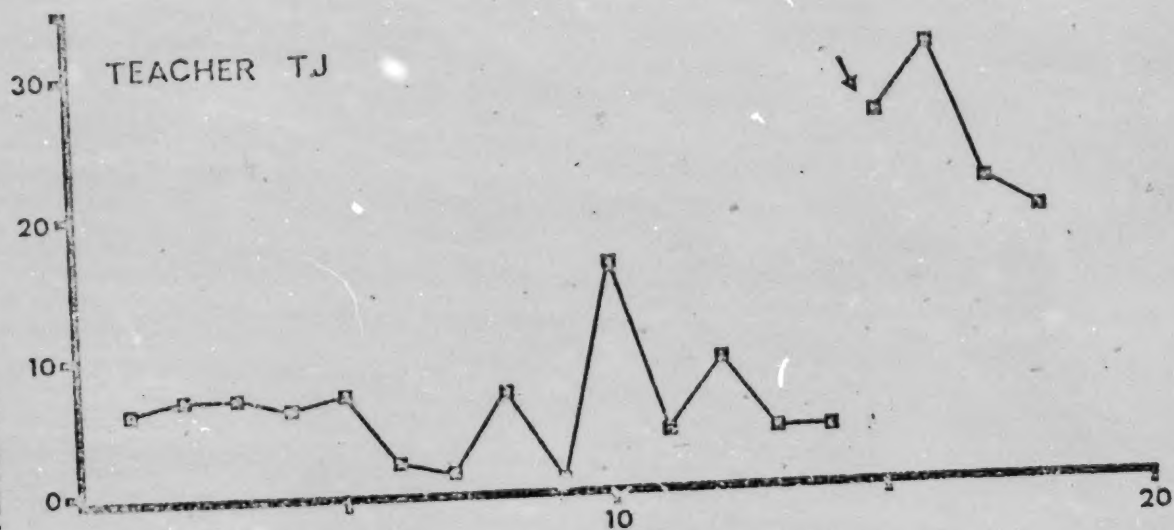
% TEACHER BEHAVIOR USED TO PRIME AND REINFORCE PEER INTERACTION

↓ SEEING-OWN-GRAPH
PROCEDURE

TEACHER JW



TEACHER TJ



DAY OF STUDY

Figure 4 shows the daily percent of teacher behavior used to prime and reinforce peer interaction for teacher MR during condition of baseline, seeing graphs, not seeing graphs, and seeing graphs again. The assignment condition produced no change from baseline rates, therefore is treated as baseline for the Graph procedure.

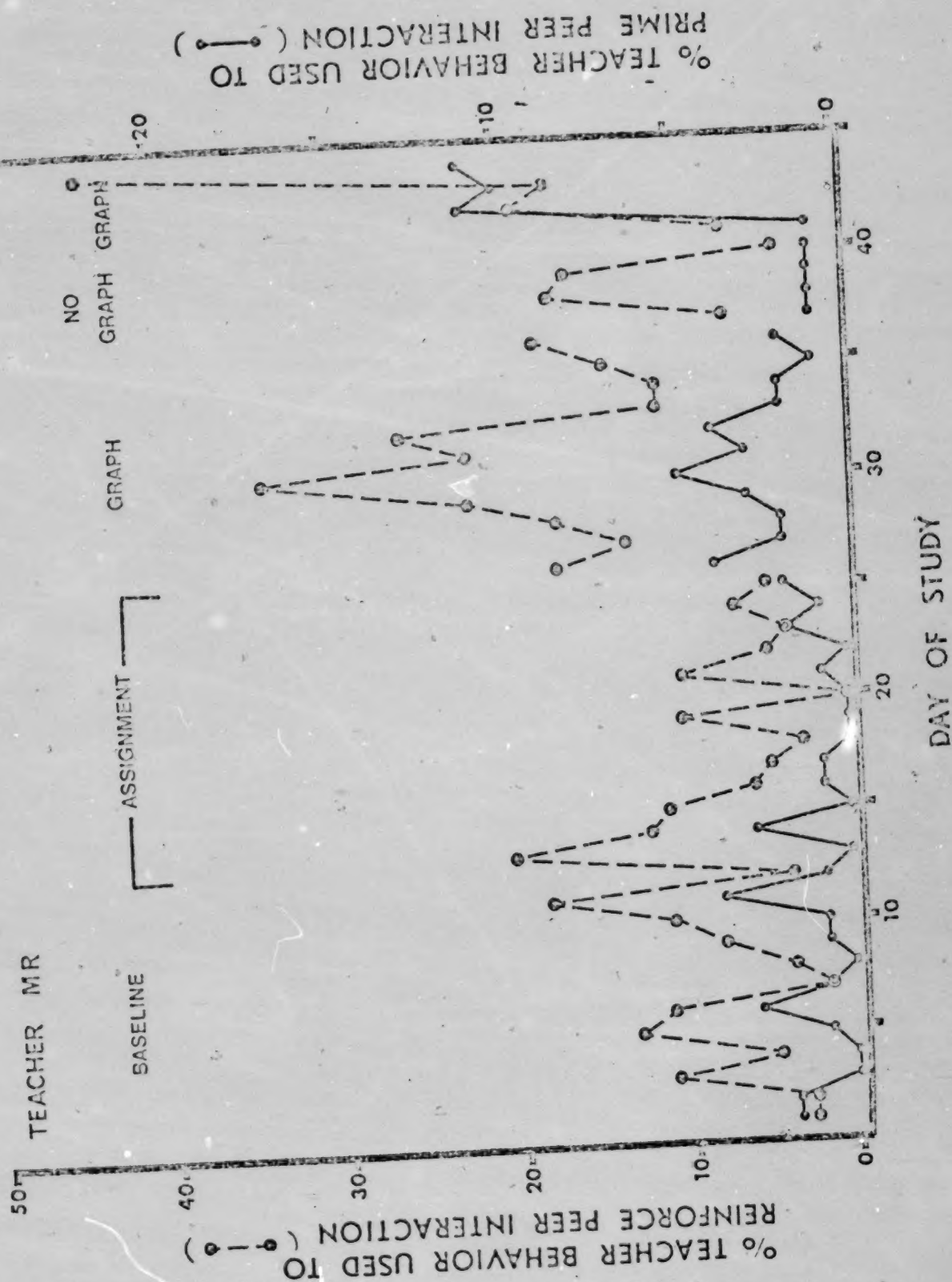
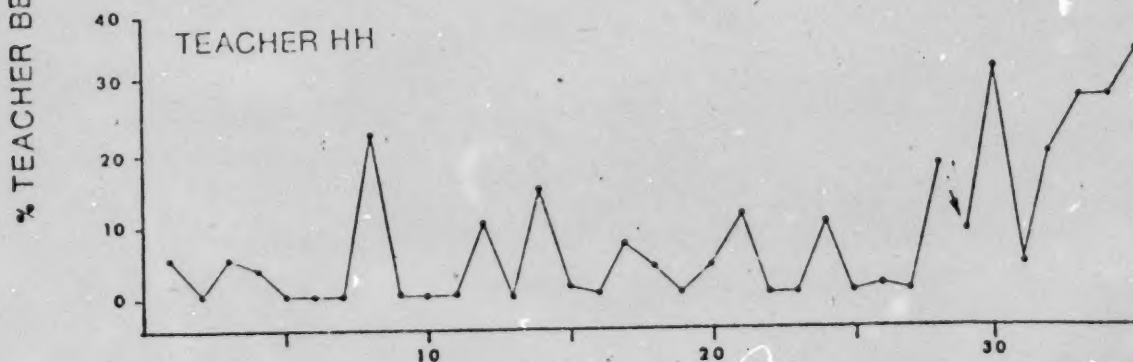
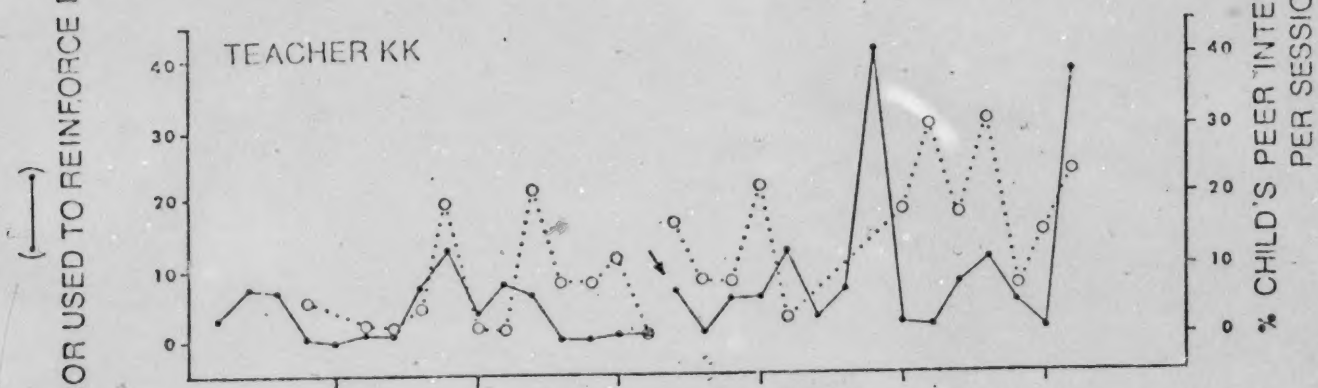
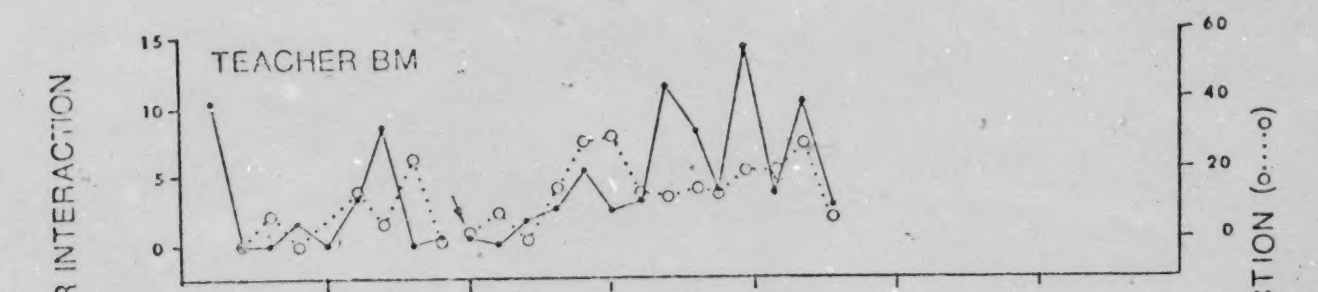
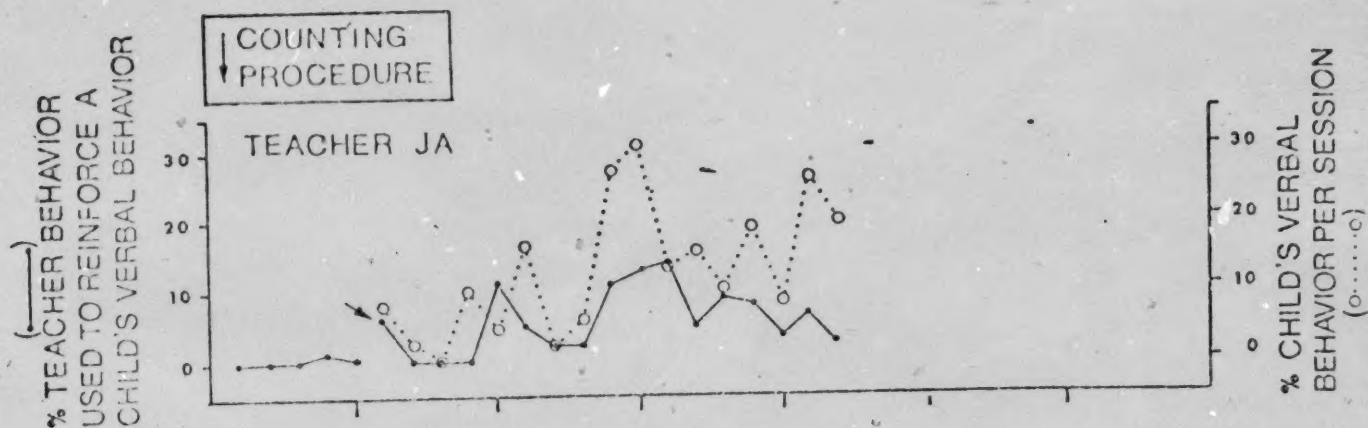


Figure 5 shows the percent of teacher behavior used to reinforce child behavior for four teachers before and after the sequential application of the Counting procedure. The arrow indicates where the Counting procedure was shown in the conditions corresponding to the training procedures for Teacher JA, EM, and KK.



DAY OF STUDY

Figure 6 shows the daily rate of answering questions for three teachers (KL, MJ, and KS) before and after the introduction of the Package Procedure. Data are shown for Teachers MJ and KS under the No Package condition (no counting and no graphs). For Teacher MJ the fading procedure is shown: days when she did not count (N) and days when she did not count nor view her graphs (NG). The self counted data of Teacher MJ are plotted by the hatched bars.

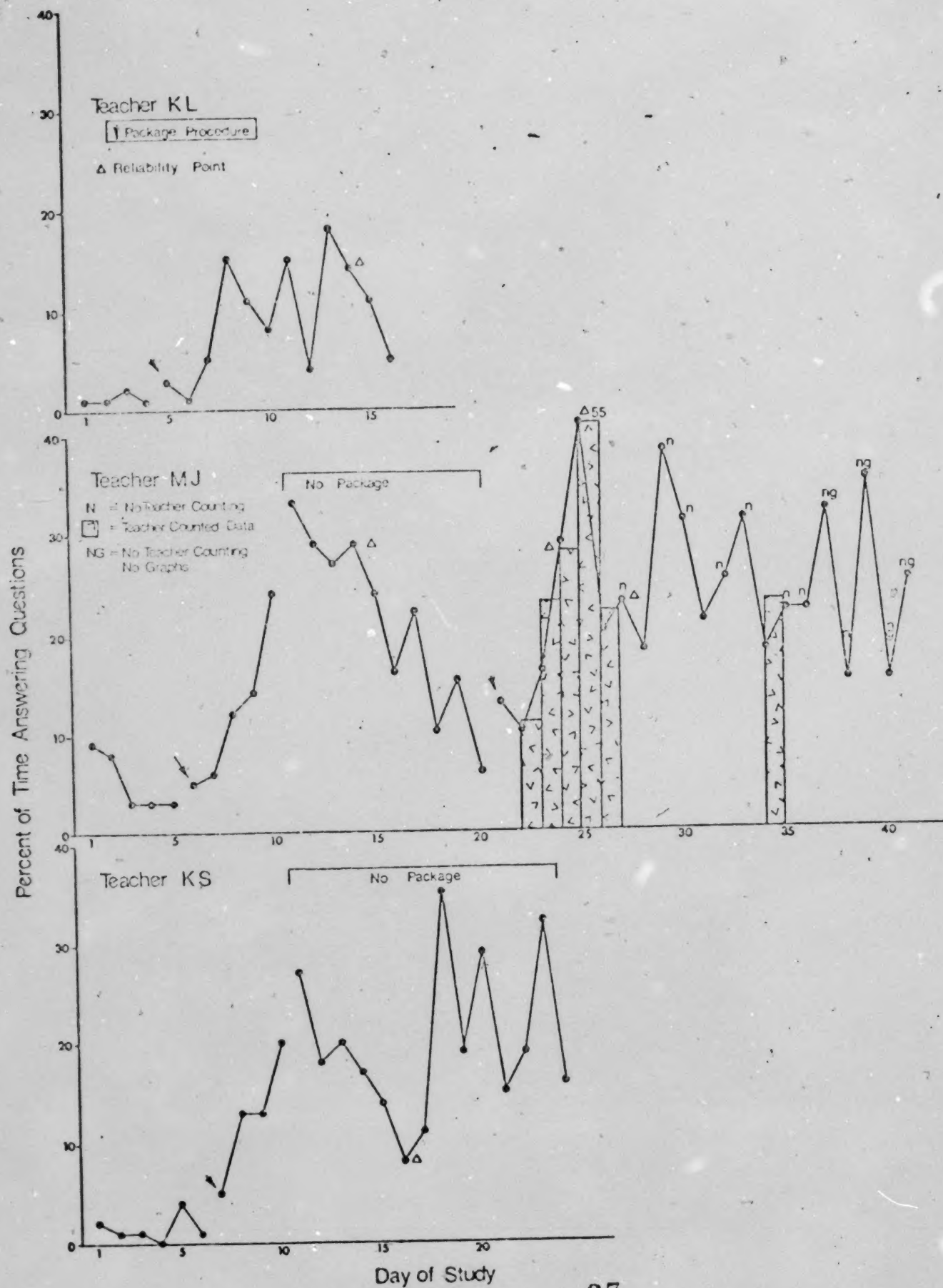


Figure 7 shows the daily rate of answering questions for Teacher CG under conditions of Baseline, Package, No Graphs and No Count, Package, Fading, No Graphs and No Count. The mean rate of each condition is shown by the dotted line.

John C. C.

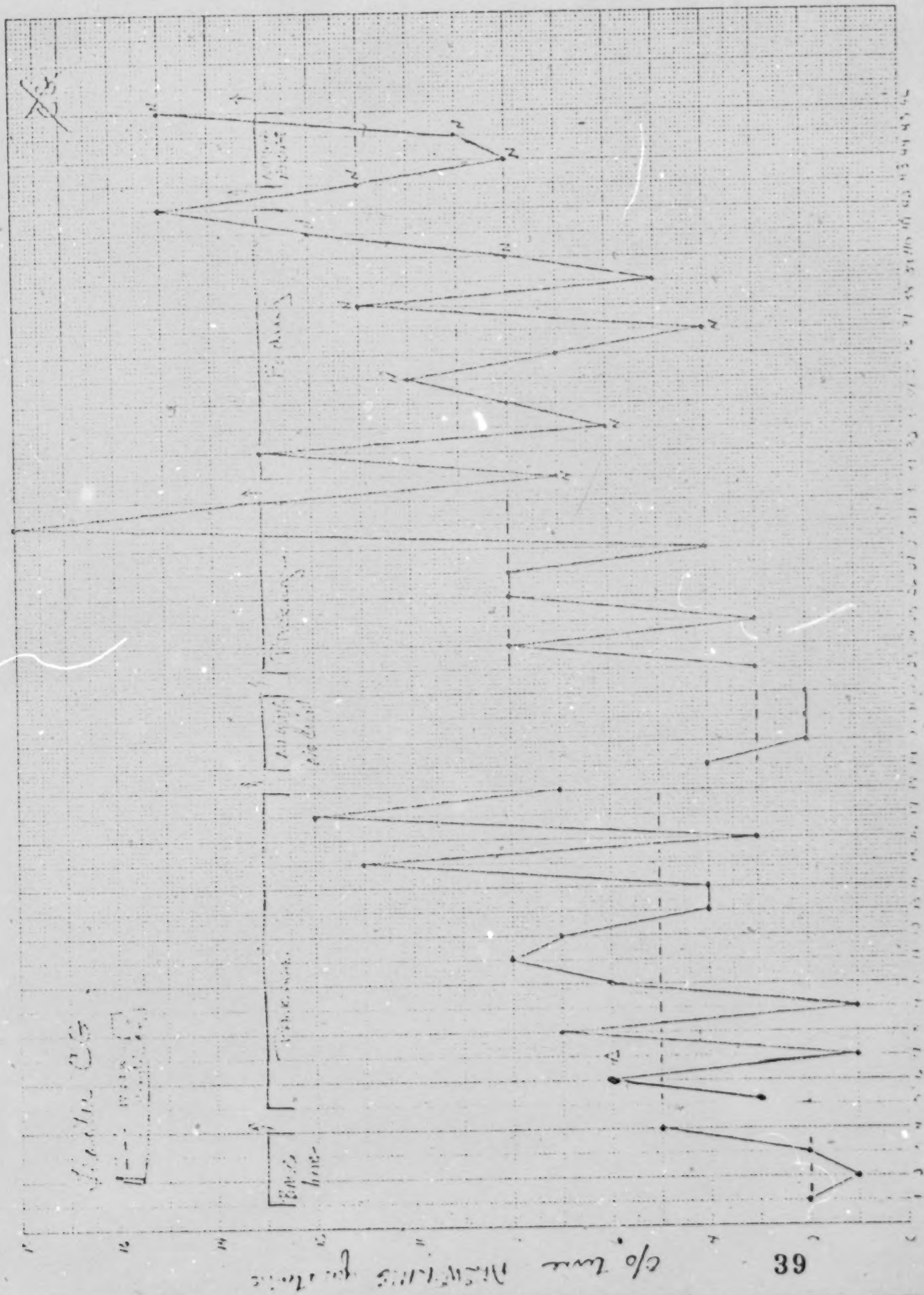
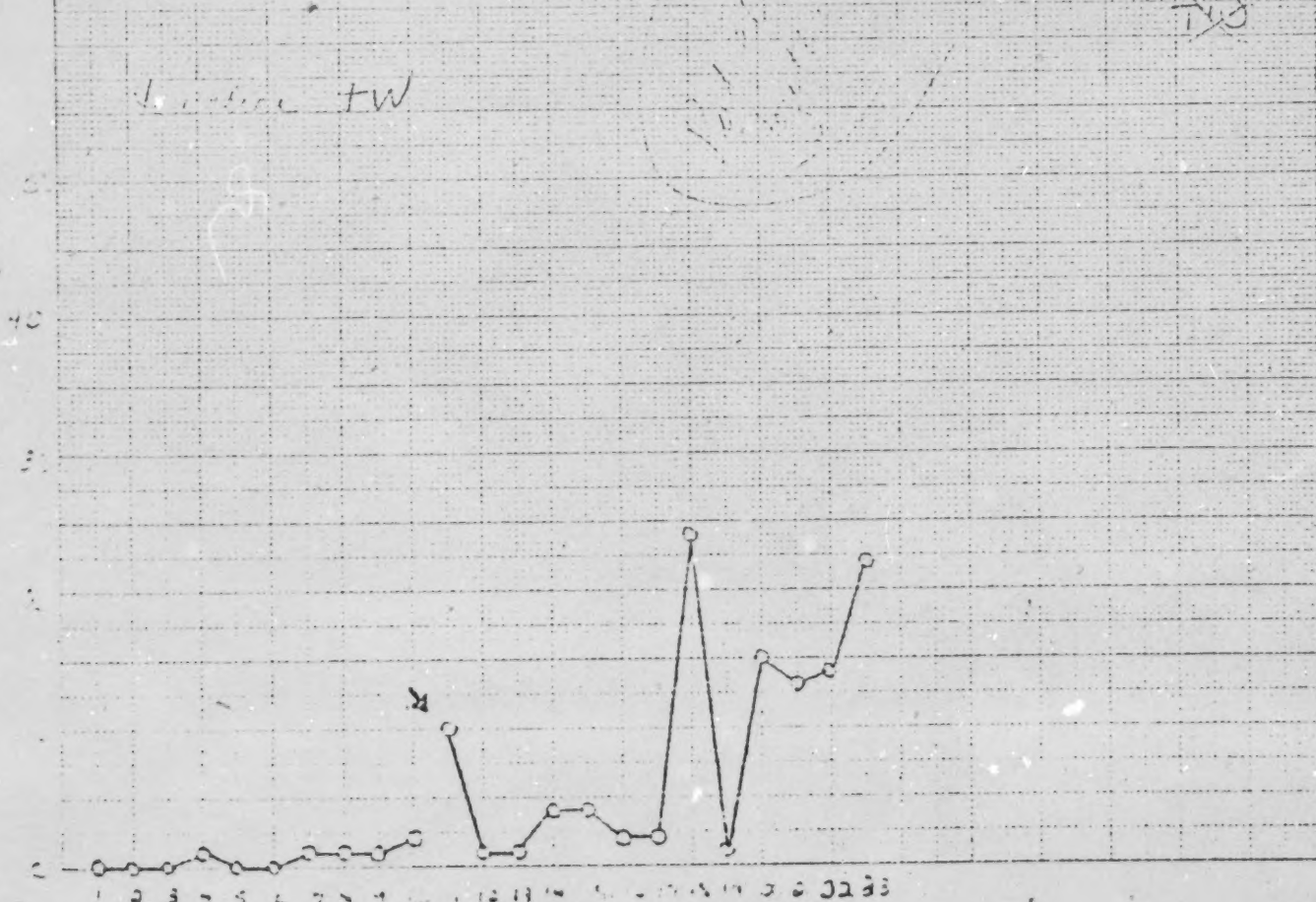
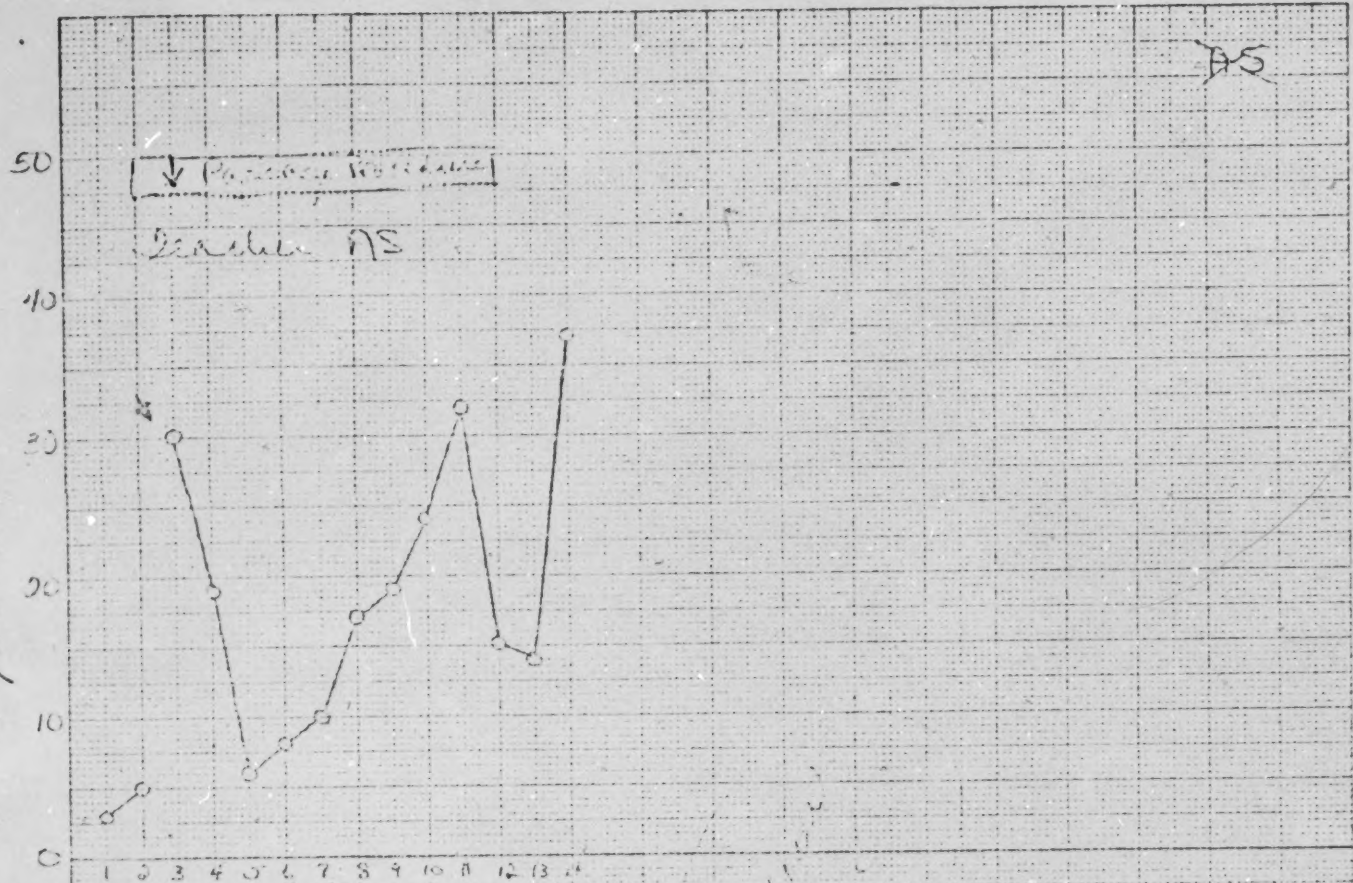


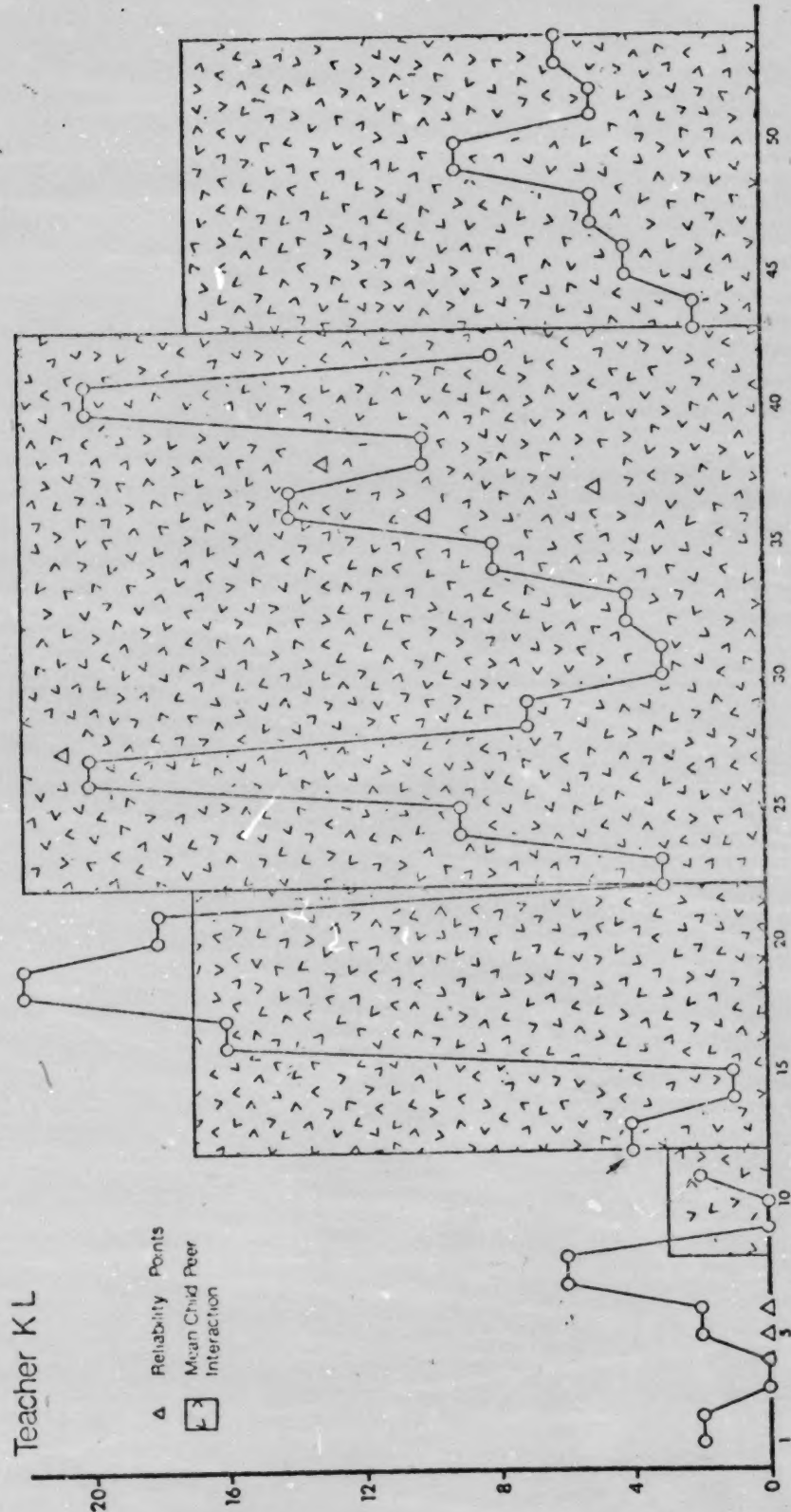
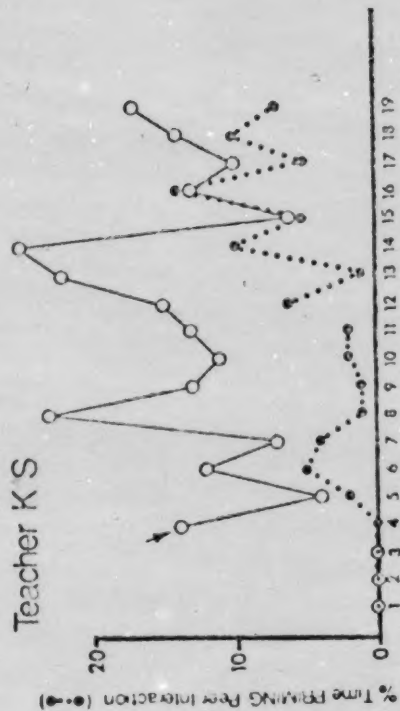
Figure 8 shows the daily rate of reinforcing peer interaction for two teachers (AS and TW) before and after the introduction of the Package Procedure. The data are averaged by two-day blocks.

REPTILES AND AMPHIBIANS
 REPTILES AND AMPHIBIANS
 REPTILES AND AMPHIBIANS



Sessions (2 Day Per Week)

Figure 9 shows the daily rates of REINFORCING peer interaction for Teachers KS and KL (indicated by open circles) before and after the sequential introduction of the Package training procedure. The daily PRIMING rates (indicated by dotted lines) are plotted for KS before and after training. The mean child peer interaction rate is shown for Teacher KL's target child under conditions of Baseline, Teacher Training, and Baseline. On day 22 Teacher KL received the training package for priming peer interaction. On day 43 Teacher KL's training shifted to another behavior. Data for Teacher KL are averaged by two day blocks.



Day of Study (KL Averaged by 2 Days)

Figure 10 shows the daily percent of time PRIMING peer interaction for Teacher's VF and AS before and after the sequential introduction of the Package training procedure (indicated by arrow). The data are averaged across two day blocks.

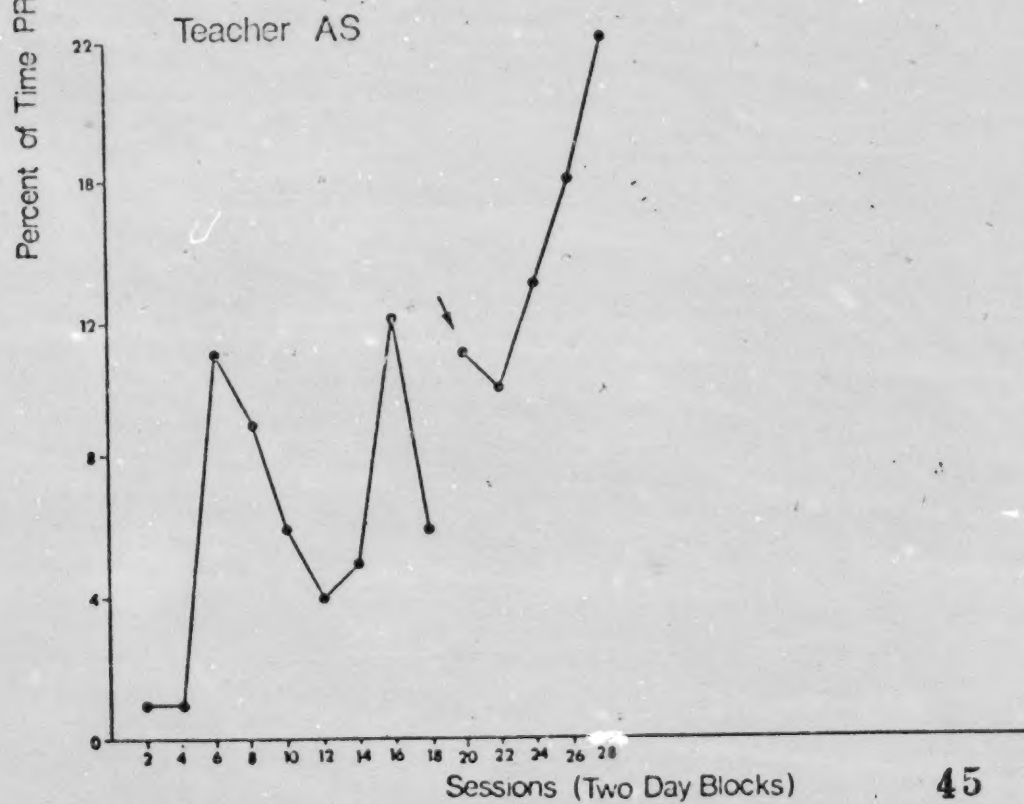
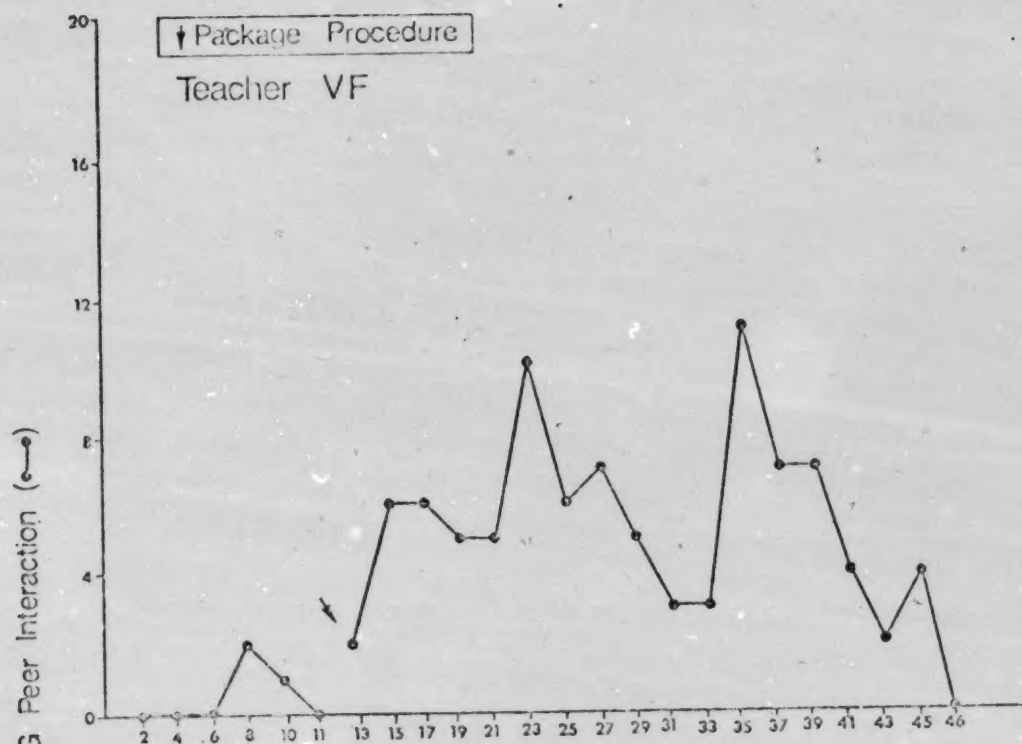


Figure 11 shows the daily rate of REINFORCING peer interaction for Teacher BS under conditions of Baseline, Package Procedure, No Count and No Graph, and Package Procedure.

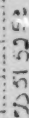


Figure 12 shows the daily rates of PRIMING peer interaction for Teacher 1215 during conditions of Baseline, No Specific Child Assignment, Specific Child Assigned, and No Specific Child. The data may also be analyzed under conditions of Baseline (days 1-3), Package procedure (days 4-27), and no package (days 28-31). The dotted lines are the daily percent of child peer interaction by the specific child.

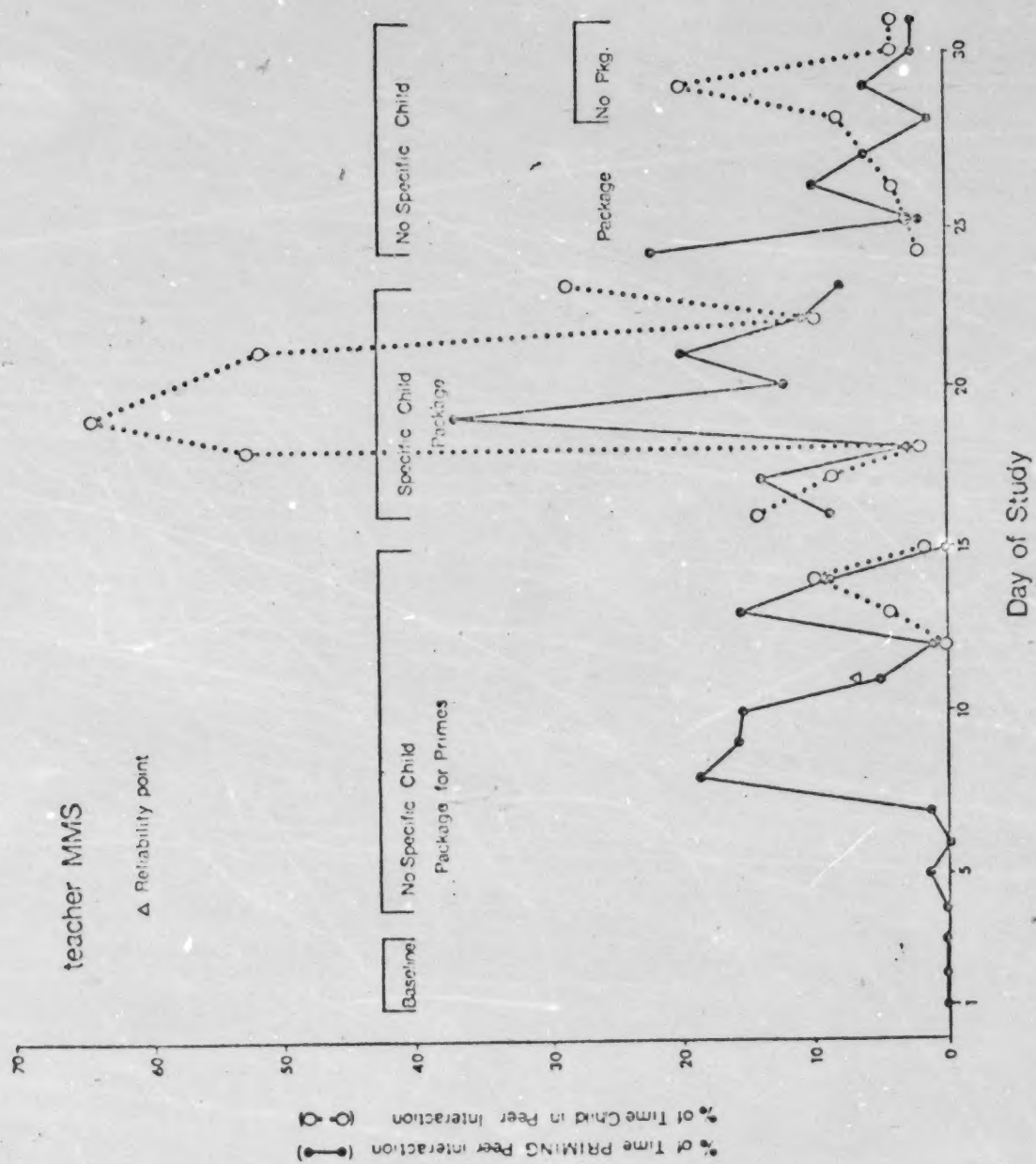


Figure 13 shows the rate of REINFORCING peer interaction for Teacher PB under conditions of Baseline and after the introduction of the Package training procedure. On days 21, 22, 29 - 34 Teacher PB delivered tokens to the children she reinforced. The data are averaged by two day blocks.

% of Time REINFORCING Peer Interaction (○—○)

↓ Package Procedure

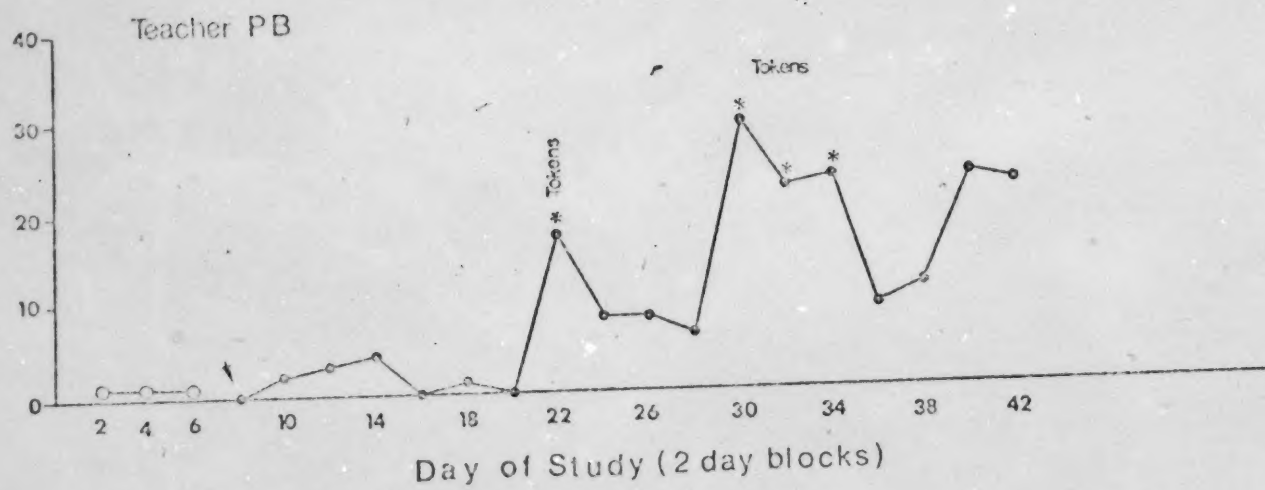


Figure 14 shows the rate of REINFORCING peer interaction for two teachers (VH and DR) before and after the introduction of the Package Procedure. On Day 29 for Teacher VH and on Day 35 for Teacher DR a discussion with their training advisors occurred. The data are presented in two-day blocks.

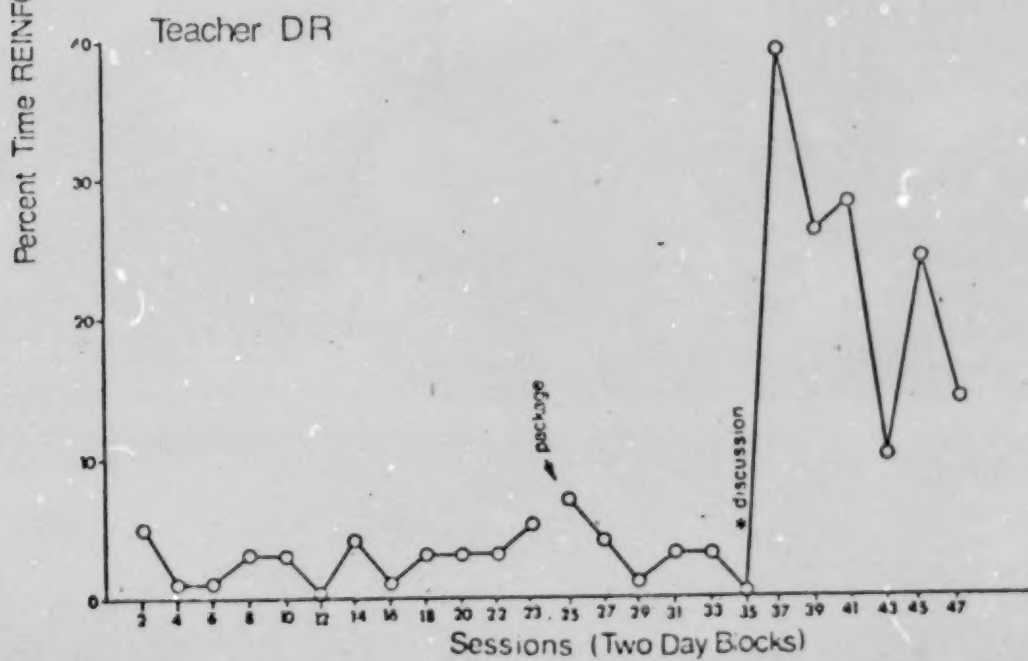
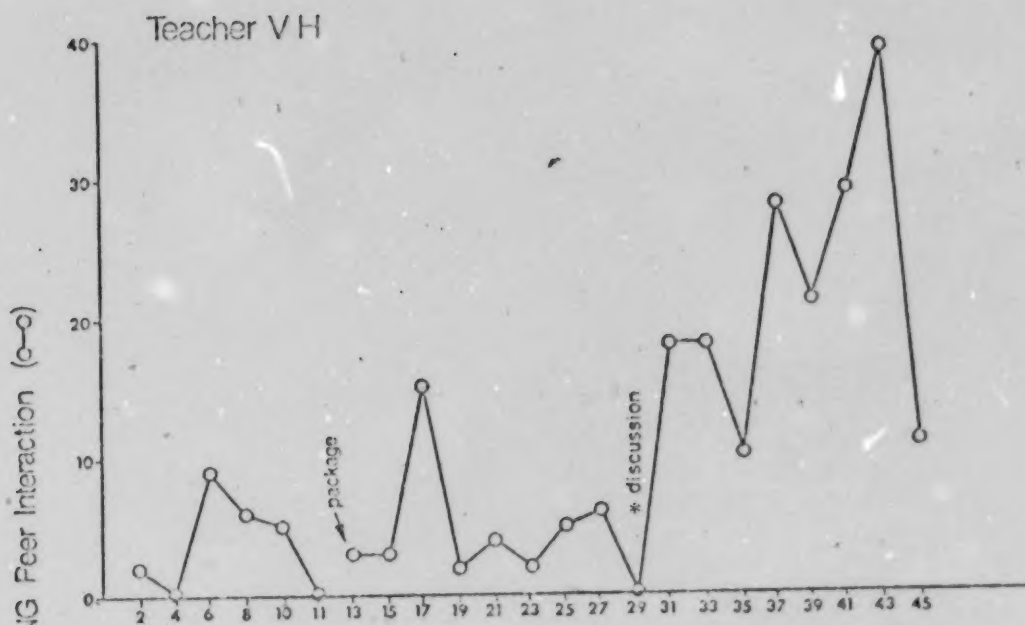


Figure 15 shows the daily rate of REINFORCING peer interaction for Teacher •
DMI under conditions of Baseline, Package Procedure, and Social
Lesson Plans.

Figure 16 shows the daily rate of STANDING behavior for Teacher JD before and after training (conference, counting and viewing graph).

May 1973

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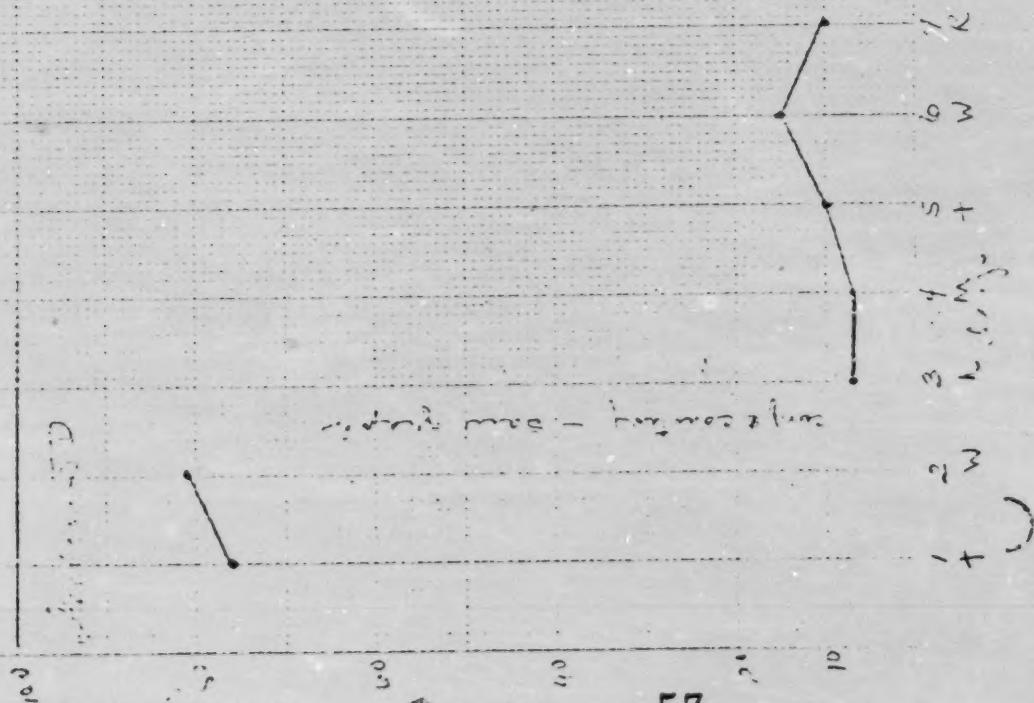
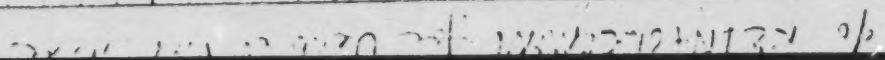


Figure 17 shows the daily rate of REINFORCING child verbal behavior for Teacher JA under conditions of Baseline, Seeing Graphs and Counting. Data are presented for rates of reinforcing one child in the outside training setting, all children in the outside training setting, all children in the inside training setting and all children in the work setting. On Day 20 the teacher did not count her behavior. From Days 17-23 the teacher counted for ten minutes. From Days 24-27 she counted for 30 minutes.



PART B

An Experimental Analysis of a 3-Part Training Procedure for Teachers
and Its Effect on Increasing a Preschool Child's Peer Interaction in
Specific Classroom Activities

Janice J. Vogel and Margaret C. Holmberg

AN EXPERIMENTAL ANALYSIS OF A 3-PART TRAINING PROCEDURE
FOR TEACHERS AND ITS EFFECT ON INCREASING A PRESCHOOL
CHILD'S PEER INTERACTION IN SPECIFIC CLASSROOM ACTIVITIES

by

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B.A., University of Kansas, 1965

Submitted to the Department of
Human Development and the Faculty
of the Graduate School of the
University of Kansas in partial
fulfillment of the requirements
for the degree of Master of Arts.

Margaret C. ...
Instructor in charge

James ...
For the Department

ACKNOWLEDGMENTS

I am most grateful to Mrs. Margaret Cooper Holmberg for her guidance and constant encouragement and support during the conduct and writing of this study. Many thanks also to Mrs. Karen Hudman for her excellent observing, and to student-teacher J. D. for her interest in, and cooperation with this research. I would also like to thank Miss Carolyn Thomson and Dr. Donald Baer for serving on my committee, and my family for tolerating my low rate of attention to them.

J. L. V.

ABSTRACT

A three part training procedure was analyzed for its effect on increasing the priming and reinforcement behaviors of a preschool teacher in training. The three components of the package were preparing a written assignment listing examples of child behaviors and ways a teacher might prime or reinforce the behavior, viewing graphs of her behavior, and counting her own behavior. The subject teacher, an undergraduate student in a one semester teaching practicum, showed slight increases in both priming and reinforcement behaviors after she had initially viewed the graphs and begun preparing the written assignment. The introduction of the package component of self-counting the behaviors resulted in the teacher's highest rates of both priming and reinforcement. These rates were then maintained by viewing the graphs only.

The teacher's self-counted data also was compared with observer-counted data. Similar points or trend directions did not occur, indicating that although self-counting may be an effective way to increase a teacher's rate of behavior, it may not be a particularly reliable way to measure the behavior.

The trained teacher behaviors were also analyzed as the independent variable in modifying the social peer interaction behaviors of a target child. The child was a 4-year-old boy who had exhibited a normal rate of peer interaction when playing in the block area of the classroom but who had low rates of interaction when in other activity

areas. Teacher primes and reinforcements for peer interaction resulted in slight increases in the child's behavior. An environmental set up activity which had group-oriented materials and equipment situated in a non-block area also resulted in a slight increase in child peer interaction. The combination of the environmental set up activity and teacher primes and reinforcements produced the highest level of child peer interaction.

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INTRODUCTION

Most of the behavior modification studies carried out in preschool settings have been attempts to change a child's behavior through the use of selective attention on the part of the teacher. This body of research has indicated that there are two components of teacher attention which have a high probability of changing virtually any child behavior. These techniques are the priming and the social reinforcement of that behavior. Within the past five years a number of studies have attempted to discover what training procedures facilitate the acquisition of priming and reinforcement skills by teachers-in-training.

The first attempts to analyze teacher training techniques for preschool teachers were by Cooper, Thomson and Baer (1970) and Thomson and Cooper (1969). Cooper, et al. (1970) trained teachers to increase their rates of attending to appropriate child behaviors through the use of feedback given by a trained observer at periodic intervals during the teaching session. Thomson and Cooper (1969) studied the effect of immediate feedback accomplished through the use of a radio system. Two teachers were trained to prime and reinforce child peer interaction and the effects of their training were measured by measuring the behavior changes of two target children.

Cossairt, Hall and Hopkins (1972) used experimenter's instructions, feedback and feedback plus praise to increase teacher praise

for student-attending behaviors of three elementary school teachers. For two teachers instructions and feedback had inconclusive results. Feedback plus praise produced significantly more teacher praise for student-attending behavior. The third teacher received all three conditions as a single "package" which was also successful in producing more teacher praise for student-attending behavior.

Thomas (1972) had teachers view videotapes of their teaching behavior and count the occurrences of three desired behaviors: token delivery, behavior specific praise (reinforcement) and instructional probes (primes). The frequency of each behavior category increased as the teacher counted it. However, when the teacher increased the frequency of reinforcement behaviors there was a decrease in the frequency of priming behaviors.

Thomson, Holmberg and Baer (1971) analyzed singly seven training procedures designed to increase a teacher's priming or reinforcement behavior. The seven procedures were: 1) observation of other teachers, 2) assignments to list ways a teacher might prime or reinforce child behavior, 3) cues from the observer or head teacher, 4) observer feedback, 5) graph feedback, 6) on-the-spot feedback and 7) counting by the teacher of her own behavior.

Later Holmberg, Thomson, Goetz and Holt (1972) combined the procedures of writing assignments, viewing graphs, and self-counting own behaviors into a package procedure to increase the priming and reinforcement behaviors of student teachers.

The child behavior which many parents and teachers consider important for preschool children to acquire is that of social peer interaction. Studies by Allen, Hart, Buell, Harris and Wolf (1964),

Foxwell (1966), Ingram (1967), Hart, Reynolds, Baer, Brawley and Harris (1968), and Goetz (1970) have all demonstrated increased peer interaction through the technique of the teacher's attending to the child when he was engaged in peer interaction.

Foxwell's (1966) replication of Allen et. al., (1964) added the dimension of primes, defined by Foxwell as "structuring a situation to make it more inviting to the child and to help him enter the situation more easily."

Ingram (1967) further broadened the concept of primes to include a "verbal suggestion or request which will put the child in the immediate vicinity of other children and give him a function to perform in relation to other children."

Further analyses of the dimensions of primes and reinforcements were reported by Goetz (1970) and Miller (1971). Goetz (1970) compared combinations of direct and indirect primes and direct and indirect reinforcements. The greatest increase in peer interaction occurred when indirect primes were combined with indirect reinforcement.

Miller (1971) studied contingent teacher attention in combination with two types of primes: continuous and discrete. Discrete primes plus contingent teacher attention produced the greatest increase in child peer interaction.

Two recent studies have shown that teacher attention is not the only technique which is effective in modifying a child's interaction behavior. Dyson (1969) found that teacher's verbal suggestions and attention were ineffective in increasing peer interaction in her subject. Structuring the environment so that the child was given a role to play in specially designated cooperative activities did increase

peer interaction and the increased rate proved to be maintainable by teacher attention alone.

Cooper (1972) found that while teacher primes and reinforcements were effective in increasing cooperative play, an enhanced setting with group-oriented materials and equipment was just as effective in increasing cooperative play. A combination of enhanced setting and teacher primes and reinforcement produced the greatest increase in cooperative play.

The teacher training package developed by Holmberg et al. (1972) did not analyze any child behaviors in conjunction with the trained teacher behaviors. The question then is whether the teacher training package produces changes in a teacher's behavior which then result in changes in a child's behavior.

The purpose of this study was to replicate the Holmberg et al. (1972) teacher training package to train the subject teacher in the acquisition of techniques to modify child behaviors, and to analyze whether the trained behaviors did in fact modify the peer interaction of a target child. A comparison was made of the teacher counted data with the observer counted data during the training procedure to determine whether teachers could validly measure their own behaviors. Another problem examined was the additional effect an environmental manipulation might produce on the child's interaction behavior.

PROCEDURE

Subjects

Teacher J. D. was an undergraduate student fulfilling a one semester practice-teaching requirement for a B.A. degree in Human Development and the Kansas early childhood teaching certificate. She

functioned as a member of the teaching staff in a classroom of the University of Kansas Edna A. Hill Child Development Preschool Laboratories with a head teacher, two graduate student assistant teachers, and another undergraduate student teacher. Her general daily teaching responsibilities involved planning an activity area, leading a small group activity, and helping the children as they worked on independent activities. She also shared the responsibility for large group and outside activities.

Also as part of her practicum, J. D. was required to demonstrate that she had acquired two techniques which have been shown to be effective in changing a child's behavior: the priming and the social reinforcement of that behavior. A training procedure to aid her in the acquisition of these two techniques was the focus of this analysis. J. D. was asked to select a child whose social peer interaction behavior was limited, but modifiable during the time limit of the semester, to which she could direct her teaching techniques.

The child subject, called Derek in this report, was a 4-year-old boy enrolled in the preschool laboratories during the 1971-72 school year. This was his second year at the school. His class was composed of 17 3- and 4-year-old children who attended the school for 2½ hours a day, four afternoons a week.

This study was begun during the second semester of the school year and at that time it was noted that while Derek's social interaction was not extremely low it was below average for a 4-year-old, and seemed to be concentrated in the block area, an area which usually did offer more opportunity for social interaction and cooperative play. In fact, even if Derek was in an activity in another area he usually spent quite

a lot of time watching the activity in the block area. Therefore it was decided to attempt to increase Derek's rate of social peer interaction in areas of the classroom other than the block area.

Observational Procedures

The behaviors of both the teacher and the child were recorded by a trained observer who alternated between each of them for blocks of 4-minutes. Observations occurred during the first hour of each day. This hour was a free choice period during which the children could play in any or all of the planned activity areas of the room, such as blocks, painting, dramatic play, science, music, or language.

The teacher behaviors observed were the priming and reinforcement of children's verbal, social, and activity behaviors. The behaviors were recorded at 10-second intervals with only the first prime and/or reinforcement occurring within an interval being recorded.

The behaviors toward which the training procedures were directed were the priming and reinforcement of social peer interaction. Other teacher behaviors were judged as occurring at an appropriate rate during baseline.

Priming was defined as a verbal or nonverbal request, command, or suggestion to a child to engage in a social behavior. Examples of primes would be handing two children a box of wooden trains and tracks, saying, "Derek, why don't you and Danny build a railroad together?" or "Tell Ann what you are making."

Reinforcement was defined as any teacher attention emitted within approximately 10-seconds following the child's being in social peer interaction. Examples of reinforcements are saying, "What a big house you two have built!", handing more linker toys to two children building a joint

structure, or patting a child who is rocking in a wooden boat with other children.

During the counting portion of the teacher training procedure the teacher tabulated her own behaviors. She counted all the primes or reinforcements she emitted within a continuous 15- or 20-minute portion of the free choice play period.

The child behaviors observed were activity involvement, verbal and social behaviors, and teacher attention. The behaviors were observed at 10-second intervals and all behaviors occurring within that time were recorded, not just the first behavior occurrence per interval. Social peer interaction was the focus of this study and is the only behavior for which data will be given. Social interaction was defined as occurring when two or more children were engaged in verbal or non-verbal initiations and responses.

Derek's social peer interaction was observed in two locations: the block area and in all other areas (non-block area). The block area was defined as the carpeted area of the room in front of the one-way mirrors and separated from the rest of the room by book racks and low dividers. Any activity planned in this area was termed a block area activity whether or not it involved the use of blocks. The non-block area was any place else in the room.

An example of the recording form is found in the Appendix. Symbols and examples of coded behavior are presented also.

Reliability

Reliability checks were made at least once during each condition of the study by a second observer making simultaneous but independent recordings of the same behaviors. Reliabilities for both teacher

behaviors and child behaviors were figured in two ways: by intervals observed, and by intervals scored. On reliability check days, data points obtained by tallying the second observer's data are plotted along with the first observer's data.

Design - Teacher Study

A multiple baseline was used to show that the same procedure applied sequentially to different behaviors of the teacher produced increases in each behavior.

The teacher training procedures, termed the "package", consisted of three parts: graph feedback, assignments, and counting. The graph feedback began with the head teacher defining the behavior represented on the graph, explaining how the percentage was derived, and suggesting what a normal rate of that behavior might be. Thereafter the subject teacher was to look at her graph at the end of each daily session. Weekly the head teacher and the teacher-in-training viewed the graph together. This often included redefining behaviors and answering questions from the subject teacher.

The assignment given to the subject teacher included three parts. First she was to list ten examples of verbal and nonverbal social peer interaction. Next she was to list ten ways in which a teacher could prime and/or reinforce such behaviors. After approval of the list by the head teacher, the subject teacher was to use the examples in the classroom and to note what the child was doing when she attended to him, what the teacher did and said, and what the child did after the teacher attended to him. The subject teacher did this for one or two days before beginning to count.

The counting procedure required the teacher to tabulate on a wrist golf counter the number of social primes or reinforcements she gave during a 15- to 20-minute segment of the daily free choice play period. She kept her own graph of the daily count.

Sequence of Procedures - Teacher Study

Baseline 1: During a baseline of 16 days data was taken on the occurrence of primes and reinforcement of social behaviors given by the teacher. No instructions were given to the teacher regarding priming and reinforcement of child peer interaction. On day 9 the teacher selected the target child.

Package for Social Primes: On day 17 the teacher saw her graph of social primes and was told to look at it at the end of each daily session. She did not see the graph of her social reinforcement behavior at this time. On day 17 the teacher was also given the assignment to list ways in which she might prime peer interaction. From days 20-29 the teacher counted the number of social primes she gave during a 15- or 20-minute segment of the daily free-choice play period.

Baseline 2: The baseline for social reinforcement lasted the 28 days comprising Baseline 1 and the package for social primes.

Package for Social Reinforcement: On day 29 the teacher saw her graph of social reinforcement and began viewing the graph daily in addition to the graph of social primes. On day 29 the teacher was also given the assignment to list ways in which she might reinforce child peer interaction. From day 32-44 the teacher counted the number of social reinforcements she gave during a 15- or 20-minute segment of the daily free choice play period. During this time she was told to continue her rate of priming.

Design - Child Study

The basic design used in the child study was the ABAB, or reversal design. The design involved a manipulation of the environment of the subject child and consisted of the presentation or non-presentation of a special activity. This special "set up" activity was teacher J. D.'s plan to increase Derek's peer interaction in just the non-block areas since baseline data had indicated that Derek was able to interact with other children when he was in the block area. Both the set up and no set up aspects of the environmental conditions occurred within all of the teacher training conditions.

Experimental Conditions

No Environmental Set Up: Under this condition Derek could choose to participate in any of the activity areas of the room, such as art, blocks, dramatic play, music, science, or language. He could stay in any activity as long as he was not physically abusing materials or children.

Environmental Set Up: Under this condition special activities which promoted peer interaction were situated in an area of the room away from the block area. Examples of these set up activities were puppets, model city, and construction toys to be used in joint building projects. Derek and one or two selected children were invited to the set up activity at the beginning of the day. Cards with the children's names printed on them designated the place for them to go. They could leave the activity at any time.

Primes: Primes delivered in the no environmental set up conditions directed Derek to interaction anywhere possible in the room. Primes delivered in the environmental set up conditions initially

directed Derek to interaction in the special activity and later in the day to anywhere else. If the environmental set up activity was the model city, an example of a prime would be, "Derek, give Billy some of the houses."

Primes and Reinforcements: Primes and reinforcement in the environmental set up conditions were related initially to peer interaction in the set up activity as in, "Derek, I like the way you and Billy have put the trees around the houses of the city." Later in the day the primes and reinforcements were related to peer interaction anywhere in the room. In the no environmental set condition primes and reinforcements occurred always to peer interaction anywhere in the room.

Sequence of Conditions - Child Study

No Environmental Set Up No Primes, No Reinforcement (days 1-8):

During this baseline condition data were taken on Derek's peer interaction and notations were made on the location of his interaction.

Teachers did not attend to his peer interaction.

No Environmental Set Up and Primes (days 9-13): No activity was set up specifically for Derek but teacher J. D. did suggest to Derek that he play in activities other than the one in the block area. When Derek was playing in non-block area activities teacher J. D. primed him to interact with other children.

Environmental Set Up and Primes (days 13-15): Teacher J. D. arranged a special "set up" activity in a non-block area. She invited Derek and one or two other children to play there, then continued to offer suggestions as to how the children could use the materials together.

Environmental Set Up, Primes, and Reinforcement (days 16-26):
Teacher J. D. continued to invite Derek to the set up activity and to prime him to interact with another child. She also attended to him while he was engaged in peer interaction.

No Environmental Set Up, Primes, and Reinforcement (days 27-32):
No special activity was set up specifically for Derek. Teacher J. D. continued to prime Derek to other non-block area activities and, whenever possible, to reinforce him for peer interaction in non-block areas.

No Environmental Set Up, No Primes, No Reinforcement (days 33-37):
No special activity was set up for Derek. Teacher J. D. gave no primes or reinforcements for peer interaction.

Environmental Set Up, No Primes, No Reinforcement (days 38-43):
The special activity was available again and teacher J. D. gave Derek one or two primes to participate in the set up activity but gave no further primes or reinforcement for peer interaction.

RESULTS

Reliability - Teacher Study

Reliability checks were taken on the teacher behaviors thirteen times, at least once during each condition of the teacher study. Reliability was taken for an average period of 18-minutes. Reliability is presented in two ways, first in a graph as data points obtained by each observer for the priming and reinforcement of child peer interaction; and second in a table as agreement upon the occurrence of priming and reinforcement of child peer interaction in an interval by interval comparison of the two observers' data.

In Figure 1 the open and closed squares in both graphs show the

 Insert Figure 1 About Here

data points obtained by each observer for the behaviors of priming and reinforcing child peer interaction. An observer point was computed by dividing the number of jointly observed intervals into either the number of intervals of primes or the number of intervals of reinforcements for child social interaction. As seen in the upper graph identical points were obtained for primes on days 3, 6, 8, 11, 12, and 53, and for reinforcements in the lower graph on days 3, 5, 7, 8, and 53. The greatest discrepancy between observer points was 5% and occurred for reinforcement of child social interaction on day 6.

On days 11, 35, 46, 50, and 53 the time observed for reliability was less than the total time observed for the day. On these days there is a third data point, obtained by dividing the total number of intervals observed for the day into the number of intervals of primes in the upper graph, and also into the number of intervals of reinforcement in the lower graph. These points were recorded by the observer who had taken the greater amount of data, observer 1 on all days but day 53.

Even on days with three points the percentages of teacher behavior were comparable in most cases, indicating a consistent level of behavior throughout the day. The greatest discrepancy among points occurred on day 50 when there was a difference of 7% between the daily point obtained for reinforcement of child peer interaction by observer 1 and the reliability point obtained by observer 2. The least discrepancy among points on days with three points was 2% and occurred for primes on days 3, 5, and 53, and for reinforcement on days 11, 46, and 53.

It is important to note that while the two observers might have had similar or identical percentage points for a behavior on a certain day, it would not mean necessarily that they had achieved high agreement on when the behavior occurred. Close points indicated that the observers recorded the behavior occurrence a similar number of times, but an interval by interval comparison would be necessary to assure that they also had agreed on the interval in which the behavior occurred.

Table 1 shows the percentage of agreement achieved for each

 Insert Table 1 About Here

reliability check. Reliability for intervals observed was based upon observer agreement in an interval by interval comparison. Reliability percentages for primes and reinforcements were obtained by the following formula:

$$100 \times \frac{\text{intervals jointly observed} - \text{intervals of disagreement}}{\text{intervals jointly observed}}$$

Reliability for intervals scored was based upon observer agreement in jointly observed intervals in which either observer had recorded primes or reinforcement. Reliability percentages for primes and reinforcements were obtained by the following formula:

$$100 \times \frac{\text{intervals of primes and reinforcements} - \text{intervals of disagreement}}{\text{intervals of primes and reinforcements}}$$

Reliability for primes and reinforcements over all conditions averaged 95% for intervals observed and 72% for intervals scored. Reliability check averages for all study conditions were above 90% for intervals observed and above 70% for intervals scored, with the exception of baseline.

Table 2 shows a further analysis of the reliability over intervals

 Insert Table 2 About Here

scored. The percentage of agreement is shown for both agreement on the occurrence of a teacher prime or reinforcement, and for agreement on the type of behavior recorded. Agreement on type meant agreement on whether the behavior was a reinforcement or a prime, and if a prime whether it was successful or unsuccessful, reinforced or nonreinforced. As seen in Table 2 most of the disagreements were on the occurrence of behavior rather than on its type. Study reliability averaged 77% for occurrence of behavior and 95% for type of behavior.

Teacher Training Results

Primes for Peer Interaction: The upper graph in Figure 1 shows teacher J. D.'s daily rate of giving primes for child peer interaction. The rate was computed by dividing the intervals of primes by the intervals observed. Her baseline rate (days 1-16) was stable and low, averaging 1%.

On day 17 teacher J. D. was shown the graph of her rate of giving primes for child peer interaction and was given an assignment to list examples of child social interaction and to list ways a teacher could prompt or prime interaction to occur. Her rate began an upward trend and continued upward after she began counting (day 20) the number of primes she emitted during a 15- or 20-minute portion of the free choice play period. Teacher J. D.'s rate of priming child peer interaction averaged 11% during the training condition.

Reinforcement of Peer Interaction: The lower graph in Figure 1 shows teacher J. D.'s second behavior, her daily rate of attending to

children's social interaction. Again the rate was computed by dividing the intervals of reinforcement by the intervals observed. Her rate during baseline ranged from 23% on day 6 to 0% on days 3, 5, and 9, and averaged 5% for the condition.

During the application of the training package to increase teacher J. D.'s priming rate, and even though no definitions were given or graphs seen of reinforcement for peer interaction, the rate of reinforcement increased slightly to an average of 9%. Conversations with the observer and examination of the daily data recording forms showed that the opportunity existed for an even higher rate of reinforcement of child peer interaction. Therefore the teacher training package for reinforcement was applied at this point.

On day 29 teacher J. D. was shown the graph of her reinforcement of child peer interaction, and was given the assignment to list examples of child social interaction and to list ways in which a teacher could attend to or reinforce such interaction when it occurred. On day 32 teacher J. D. began counting her own behavior. Her rate of reinforcing child peer interaction averaged 20% for the condition. Teacher J. D.'s rate of priming, which had been trained to an average of 11%, maintained at an average of 10% during the training period for reinforcement.

During the final condition of the study teacher J. D. did not count either behavior but did continue to see daily the graphs of both her priming and her reinforcement of child peer interaction. Both rates maintained at their previous levels: priming at 10% and reinforcement at 20%.

Teacher Counted Data: One part of the teacher training package was teacher J. D.'s own tabulation of her rate of priming or reinforcing child peer interaction during a portion of the period during which observations were regularly made. The bar graph in Figure 1 show her daily count converted to points comparable to those of the trained observer by the formula:

$$100 \times \frac{\text{teacher count}}{\text{number of 10-second intervals in time teacher counted}}$$

One would not expect an exact correlation between teacher J. D.'s counted data and the trained observer's data because of the differences in methods of obtaining data. Teacher J. D. counted all the primes or reinforcements she emitted within a 15- or 20-minute portion of the day. The trained observer could record only one example of each behavior every 10-seconds during a 1-hour period. Also the teacher recorded continuously for 15- or 20-minutes while the observer sampled the behaviors of the teacher every 4-minutes, observing the child behaviors during the alternate 4-minute blocks.

Although an exact match of the two sets of data was not expected, a similar directional pattern was desired. Comparable curves are seen only in the last four days (days 27-30) of the package for primes, and days 40-42 of the package for reinforcement.

Reliability - Child Study

Reliability checks were made on the child behaviors ten times, at least once during each major condition of the child study. Reliability was taken for an average period of 14-minutes during the free choice play time.

In Figure 2 the open and closed squares show the data points

Insert Figure 2 About Here

obtained by each observer for the child behavior of peer interaction in non-block areas. An observer point was computed by dividing the number of jointly observed intervals into the number of intervals of non-block area social interaction. Identical points were obtained on days 3, 24, 25, 34, 38, and 42. The greatest discrepancy between points was 3% on days 22 and 26.

On days, 3, 24, 25, and 34 the time observed for reliability was less than the total time observed for the day. On these days there is a third point, obtained by dividing the total number of intervals observed for the day into the total number of intervals of non-block area peer interaction. These points were recorded by the observer who had taken the greater amount of data, observer 1 on all days except days 24 and 25. On days with three points the discrepancy among points ranged from 1% on day 3 to 11% on day 25.

Table 3 shows the percentage of agreement for each reliability

Insert Table 3 About Here

check. Reliability for intervals observed was based upon observer agreement in an interval by interval comparison. Both total peer interaction and non-block area peer interaction reliability percentages were obtained by the following formula:

$$100 \times \frac{\text{intervals jointly observed} - \text{intervals of disagreement}}{\text{intervals jointly observed}}$$

Reliability for intervals scored was based upon observer agreement in jointly observed intervals in which either observer had recorded peer interaction. Both total peer interaction and non-block area peer interaction reliability percentages were obtained by the following formula:

$$100 \times \frac{\text{intervals of peer interaction} - \text{intervals of disagreement}}{\text{intervals of peer interaction}}$$

Reliability over all conditions for both peer interaction and non-block area peer interaction averaged 94% for intervals observed and 82% for intervals scored. Reliability check averages for all study conditions were above 80% with the exception of the no environmental set up 1 condition (intervals scored).

Condition Results

Figure 2 shows the child's non-block peer interaction under the environmental manipulations as well as under the teacher training conditions. Peer interaction data was computed by dividing the intervals of interaction by the total intervals observed.

Environmental Manipulations: As seen in Figure 2, Derek's average rate of non-block area peer interaction for the first no environmental set up condition was 6% and for the first environmental set up condition was 28%. His average rate for the second no environmental set up condition dropped to 10% and then trended upward during the second environmental set up condition, averaging 14%.

Teacher Training Conditions

No Environmental Set Up, No Primes, No Reinforcements (days 1-8): During an 8 day baseline Derek's peer interaction in non-block areas ranged from 12% on day 4 to 0% on days 1, 5, 6, and 7. The average

rate of interaction was a low 3%.

No Environmental Set Up and Primes (days 9-12): On day 9 teacher J. D. began the training procedure for priming child peer interaction. Derek's behavior increased dramatically to 32% on day 9 but dropped to baseline levels over the next three days. Due to the high point the average peer interaction for the four days was 14%.

Environmental Set Up and Primes (days 13-15): On day 13 teacher J. D. began setting up a special non-block activity. She invited Derek to the activity and gave suggestions to him as to how he could use the materials with the other children there. Derek's peer interaction jumped to 43% on day 13 and then leveled off to 28% and 26% the next two days. The average rate of peer interaction for the three days was 32%.

Environmental Set Up, Primes, and Reinforcements (days 16-26): On day 16 teacher J. D. began her training package for reinforcement of child peer interaction. She continued to prime Derek to the set up activity, and in addition she also attended to him while he was engaged in peer interaction. Derek's non-block area peer interaction was quite variable during this condition, ranging from 65% on day 18 to 7% on day 24. The average rate was 22%.

No Environmental Set Up, Primes, and Reinforcements (days 27-32): Beginning on day 27 the set up activity was not presented to determine the effect of the special activity. Although there was no set up activity, teacher J. D. continued to prime Derek to other non-block area activities, and, whenever possible, to reinforce his peer interaction in non-block area activities. Derek's average rate of peer

interaction dropped to 10%.

No Environmental Set Up, No Primes, No Reinforcements (days 33-37):
Teacher J. D. stopped priming and reinforcing Derek on day 33. Derek's average rate of non-block area peer interaction was 9%.

Environmental Set Up, No Primes, No Reinforcements (days 38-43):
On day 28 the environmental set up activity was reinstated. The teacher J. D. gave Derek one or two primes to participate in the activity but gave no further primes or reinforcement for peer interaction. Derek's rate of non-block area social interaction ranged from 36% on day 42 to 0% on day 43 and averaged 14% for the condition.

In Figure 3 the solid line shows Derek's total peer interaction

Insert Figure 3 About Here

in block and non-block areas across the experimental conditions. The broken line shows his interaction in the block area. Derek's rate of peer interaction in the block area was lower during the conditions when training was designed to increase non-block area social interaction but the total interaction remained about the same throughout the study. Exceptions were days 10, 21, 27, 28, 29, and 43.

Teacher Behaviors

The bar graph in Figure 2 shows teacher J. D.'s attention to Derek's peer interaction when he was not in the block area. These data were recorded while the observer sampled the child behaviors. Teacher J. D. was instructed not to attend to Derek's peer interaction under either of the baseline conditions and, as seen in Figure 2, she attended to his peer interaction only once during each baseline.

Teacher J. D. began her training package for primes on day 9, but as seen in Figure 2 she did not actually increase her primes to Derek until she began the environmental set up activity on day 13. On day 11 teacher J. D. did prime Derek five times, which were recorded from teacher sampled data but did not appear in the child sampled data. Teacher J. D. further increased her attention to Derek's non-block area peer interaction when she began the training package for reinforcement on day 16.

The bar graphs in Figure 3 represent the percent of teacher J. D.'s attention to Derek when he was engaged in peer interaction. The checked bars show her total amount of attention for peer interaction, while the solid portions represent the attention for peer interaction in the block area. On days 21 and 27-29 when a high rate of interaction in the block area occurred teacher J. D.'s assigned area was the blocks. On these days she delivered more attention to Derek's block area peer interaction than to his non-block area interaction. With the exception of days 16 and 35, all days in which teacher J. D. attended to Derek's peer interaction in the block area were days in which she was assigned the activity in the block area.

DISCUSSION

The preschool teacher in this study readily acquired the techniques of delivering primes and social reinforcement for a child's peer interaction behavior. The acquisition of these techniques occurred with the introduction of a teacher training "package". The package included preparing a written assignment, viewing the graphs of her behavior, and counting her own behavior. The teacher was able to

increase the target child's peer interaction in a specific location (non-block areas) by the use of priming and reinforcement techniques in conjunction with a manipulation of the physical environment of the child.

The data showed that for both the priming and the reinforcement behaviors observed the training package produced immediate behavior changes which were maintained when self-counting was discontinued. In this respect teacher J. D. differed from the teachers in the Thomas (1972) study whose rates of one behavior dropped during the training of a second behavior.

For both priming and reinforcement a slight increase in behavior was observed after teacher J. D. had initially viewed the graphs of her behavior and had begun preparing the written assignment. The introduction of the training package component of self-counting, however, resulted in the teacher's highest rates of both priming and reinforcement. The training package component of seeing graphs was sufficient to maintain both the priming and reinforcement rates of the teacher.

The difference in methods of data collection used by the trained observer and the teacher meant that their data points would not necessarily be identical. However, it was hoped that the separate points would follow a similar curve. A difference occurred in data points and also in the trend direction between teacher-counted and observer-counted data. These discrepancies suggest that the trained observer might indicate on the data sheet when the teacher was counting so that one might say whether teacher behavior occurred primarily during counting time or throughout the entire day.

While self-counting did contribute to the change in teacher behavior, as a means of measuring behavior it is a problem at the present time. More data are needed on behaviors self-counted by teachers to establish a normal counting range, since a usual baseline rate cannot be obtained from teacher counted data without a second observer. The normative data could be used as a target range for the teacher to increase her count to if her initial self-counts showed her behavior to be lower. A second observer would still be needed for occasional reliability checks. This study has shown that although self-counting may not be a particularly reliable way to measure a teacher's behavior in the classroom it may be a good training procedure to increase the rate of behavior.

A study by Herbert (1970) also showed that accurate self-recording is not a necessary condition for the modification of adult behavior. Two mothers counted their attention to appropriate child behaviors. Agreements between parents and the observer ranged from 29% to 74% and showed no improvement over time, yet both mothers significantly increased their rates of attending to appropriate child behaviors.

The results of the child study showed that the manipulation which suggested the greatest effect in increasing the child's non-block area peer interaction was an environmental set up presentation in conjunction with teacher attention. Neither variable alone (environmental set up nor teacher attention) produced rates of peer interaction as high as the combination of the two variables. However the environmental set up only condition (days 38-43) did result in rates of peer interaction higher than the two baseline conditions. Teacher attention

only conditions (days 9-12 and 27-32) were higher than the first baseline but about equal to the second baseline. The end of the semester prevented a planned return to the first environmental set up condition to conclusively demonstrate the effectiveness of combining teacher attention with a set up activity.

Further evidence of the teacher attention effect is shown by Derek's high rate of non-block area peer interaction on day 9. The data showed that Derek received much attention from a teacher other than teacher J. D. The other teacher was attempting to indirectly prime another child into peer interaction and was giving the primes through Derek.

Data from the no environmental set up plus teacher attention condition (days 27-32) showed the effect of teacher attention on the location of Derek's peer interaction. On days 27-29 teacher J. D.'s assigned activity area was the block area. Since Derek chose to play in the block area, days 27-29 were essentially a DRO condition for him. Teacher J. D. was differentially reinforcing block area peer interaction rather than non-block area interaction. On days 30-32 teacher J. D. was not in the block area. Derek spent less time in the block area and received teacher attention only for non-block area peer interaction. Non-block area peer interaction did increase from the previous three days.

This study confirmed the results of Dyson (1969) and Cooper (1972) who found that a manipulation of the child's environment could be just as effective as teacher attention in increasing child peer interaction. All three studies found that combining the environmental manipulation with teacher attention resulted in the greatest increases

in child peer interaction.

The demonstrated effectiveness of the environmental set up activity suggests a need to study teacher training in terms of learning to control materials as well as behavior. In this study the independent variables measured for the child behavior were teacher priming and reinforcement behaviors. No data were systematically recorded on environmental set up procedures. Possible data might include type of materials, location of materials (table or floor), number and identity of peers, identity of teacher in charge, materials added to or subtracted from the original materials, theme of play, and changes of theme during course of play. In a training study these behaviors would become the dependent variables which could then be manipulated with training procedures.

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APPENDIX

SAMPLE DATA SHEET

TEACHER BEHAVIORS

Primes

Reinforcement

Child Attended To

1				2			
			C+		V+S-	(S+)	
O	CVS	U	U		C	CV	CVS-
T	T	D	D		T	T	TX

Activity Symbols

C = Conceptual activity

O = Routine activity

S = Social interaction

U = Unoccupied

V = Verbal behavior

Descriptive Symbols

Primes

+ = successful

- = unsuccessful

O = reinforced

Reinforcement

- = inappropriate behavior

Examples of social behaviors:

Interval 2 - Child T was working a puzzle and said to another child, "Look, here is a fish". The teacher said to Child T, "I see you have almost finished your puzzle".

Interval 8 - Child T was working a puzzle. The teacher said, "Ask David to hand you the last piece". Child T said to the teacher, "I can reach it myself".

Interval 10 - Child T was working a puzzle. The teacher said, "Give David that puzzle when you are finished". Child T handed the puzzle to David and the teacher said to him, "Thank you for giving David the puzzle".

Interval 12 - Child T reached for a puzzle. David said, "That's mine" and hit Child T. The two exchanged blows and the teacher said, "What is the matter, boys?"

CHILD BEHAVIORS

Teacher Number

Behavior

Peer Letter

1				2			
	1	2	2			3	13
O	OV	CVS	C	C	CS	U	U
		A		A			K

Behavior and Activity Symbols

C = Conceptual activity

O = Routine activity

S = Social interaction

U = Unoccupied

V = Verbal behavior

- = inappropriate behavior

Examples of social interaction:

Interval 3 - The subject child, who was building with blocks, said to Child A, "Seg my castle". Teacher 2 said "I'll bet ____ (Child A) could help you with your castle".

Interval 6 - The subject child, who was building with blocks, handed a block to Child A, who took it.

Interval 12 - The subject child said to Child K "Let's go outside".

TABLES

Table 1

Reliabilities for teacher behaviors

Baseline				Package for Primes				Package for Reinforcement				No Count			
Day of Study	% Agreement Intervals Observed	% Agreement Intervals Scored	Day of Study	% Agreement Intervals Observed	% Agreement Intervals Scored	Day of Study	% Agreement Intervals Observed	% Agreement Intervals Scored	Day of Study	% Agreement Intervals Observed	% Agreement Intervals Scored	Day of Study	% Agreement Intervals Observed	% Agreement Intervals Scored	Day of Study
3	100	--	23	94	77	35	95	76	46	89	63	46	89	63	
5	98	0				36	97	71	50	95	81	50	95	81	
6	90	62							53	94	78	53	94	78	
7	98	50													
8	100	100													
11	98	100													
12	95	53													
Average Reliability Over All Conditions															
				Intervals Observed - 95%											
				Intervals Scored - 72%											

Table 2

Reliability on occurrence and on type of teacher social behavior (S) by intervals scored

Day of Study	Baseline			Package for Primes			Package for Reinforcement			No Count		
	% Agreement Occurrence	% Agreement Type	Day of Study	% Agreement Occurrence	% Agreement Type	Day of Study	% Agreement Occurrence	% Agreement Type	Day of Study	% Agreement Occurrence	% Agreement Type	% Agreement Type
5	0	100	23	88	89	35	77	100	46	66	97	
6	62	100				36	71	100	50	85	96	
7	50	100							53	84	94	
8	100	100										
11	100	100										
12	54	100										
Average Reliability Over All Conditions												
Occurrence of S = 77%												
Type of S = 95%												

Table 3

Reliability for child behaviors

NO SET UP I					SET UP I				
Day of Study	Total Interaction		Non-Block Area Interaction		Day of Study	Total Interaction		Non-Block Area Interaction	
	% Agreement Intervals Observed	% Agreement Intervals Scored	% Agreement Intervals Observed	% Agreement Intervals Scored		% Agreement Intervals Observed	% Agreement Intervals Scored	% Agreement Intervals Observed	% Agreement Intervals Scored
3	95	75			22	90	73	90	73
4	94	62	92	62	23	96	82	96	80
					24	81	74	88	80
					25	94	83	94	88
					26	98	94	97	93
NO SET UP I					SET UP I				
Day of Study	Total Interaction		Non-Block Area Interaction		Day of Study	Total Interaction		Non-Block Area Interaction	
	% Agreement Intervals Observed	% Agreement Intervals Scored	% Agreement Intervals Observed	% Agreement Intervals Scored		% Agreement Intervals Observed	% Agreement Intervals Scored	% Agreement Intervals Observed	% Agreement Intervals Scored
34	95	82	95	83	38	100	95	100	100
					42	93	81	93	81

Average Reliability Over All Conditions

Total Interaction: Intervals Observed - 94% Intervals Scored - 82%

Non-Block Area Interaction: Intervals Observed - 94% Intervals Scored - 82%

FIGURES

Figure 1: Upper Graph - The solid line shows the daily rate of teacher primes delivered for child peer interaction during baseline, training and no counting conditions. The rate of teacher-counted primes during training are shown by the bar graph. The data points obtained by the two observers during reliability checks are indicated by open and closed squares.

Lower Graph - The solid line shows the rate of teacher reinforcement for child peer interaction, during baseline, training and no counting conditions. The rate of teacher-counted reinforcement during training are shown by the bar graph. The data points obtained by the two observers during reliability checks are indicated by the open and closed squares.

Teacher Behaviors

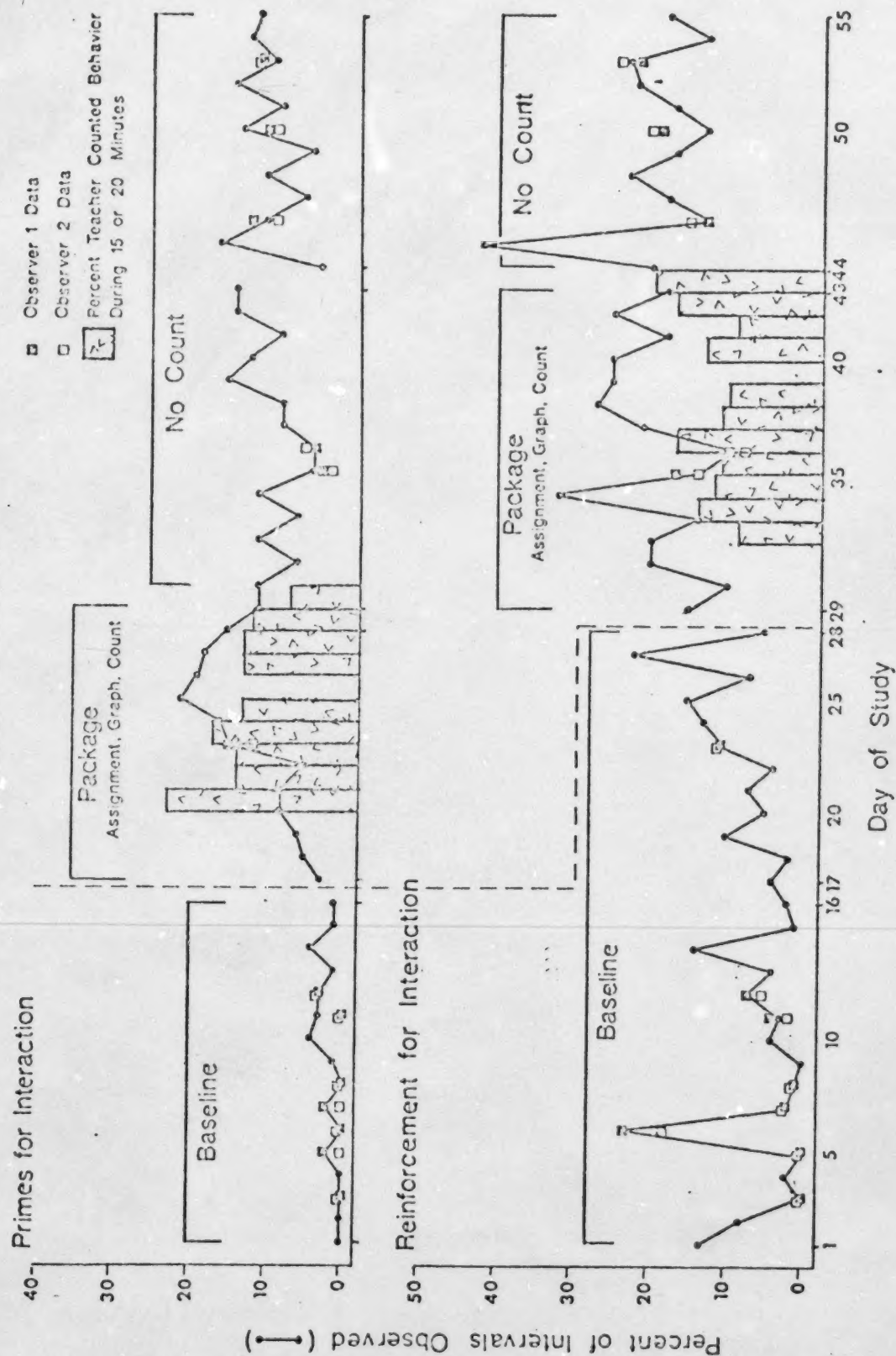


Figure 2: The rate of non-block area child peer interaction is shown across environmental manipulations and teacher training conditions. The rate of J. D.'s attention to non-block area peer interaction is shown by the bar graphs. The data points obtained by the two observers during reliability checks are indicated by the open and closed squares.

Non-Block Area Child-Peer Interaction

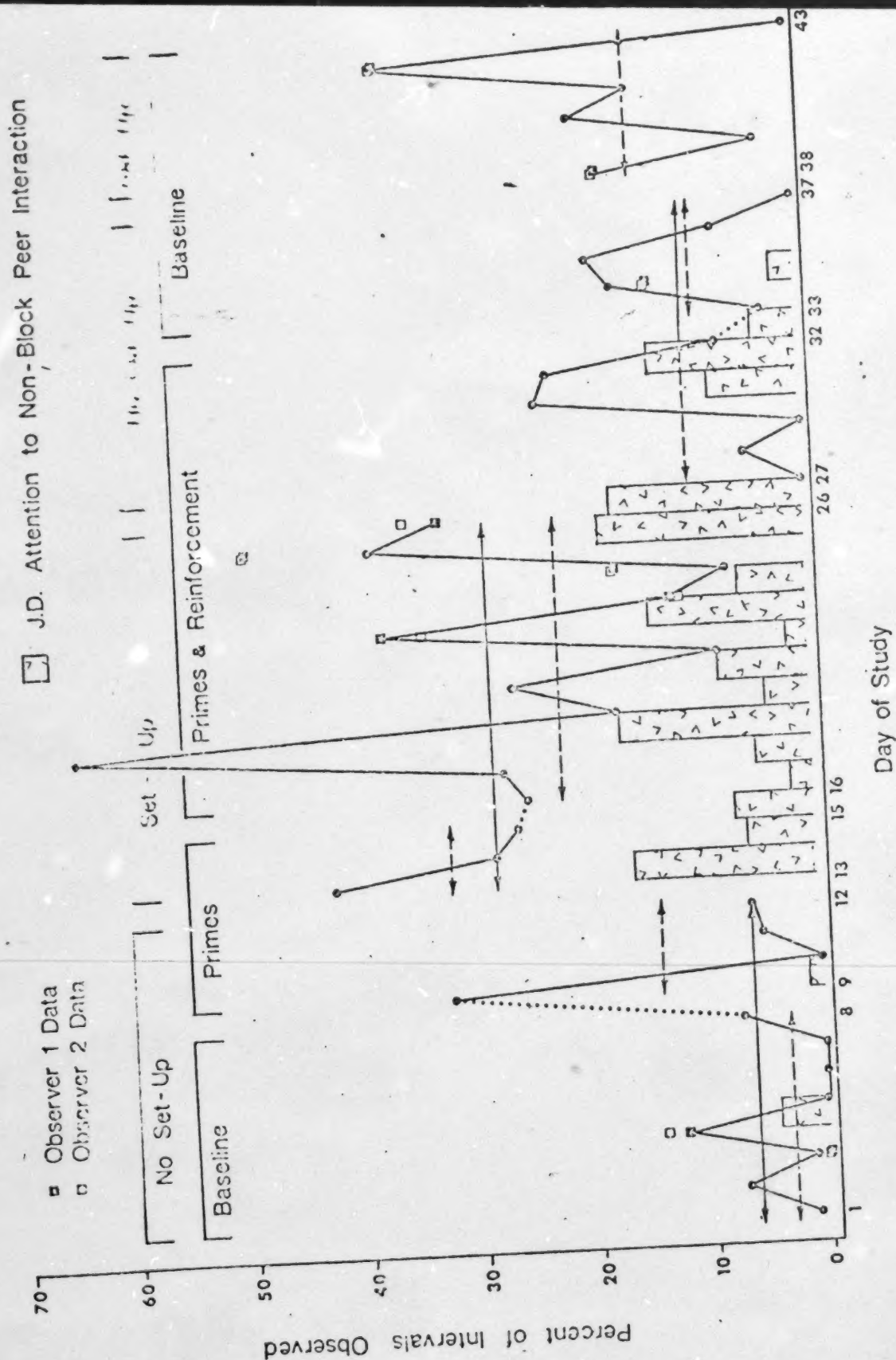
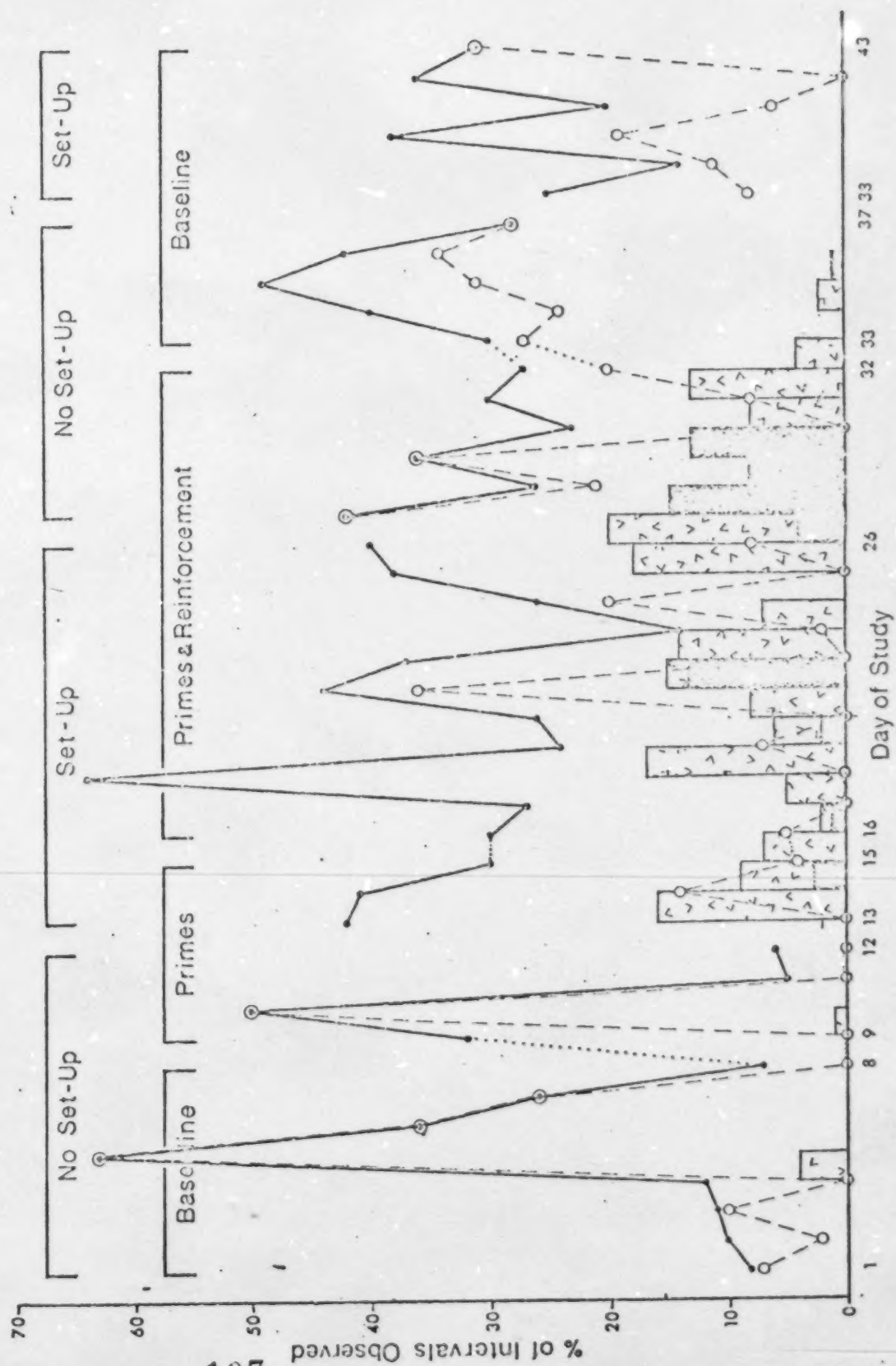


Figure 3: The rate of total peer interaction (solid line) and the rate of block area peer interaction (broken line) are shown across all conditions. The rate of J. D.'s attention to both total and block area peer interaction are shown by the bar graph.

—●— Total Peer Interaction
 - - - o - - - Block Area Peer Interaction
 [] J.D. Attention to Total Peer Interaction
 [] J.D. Attention to Block Area Peer Interaction



PART C

Case Studies in Teacher Training

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Margaret C. Holmberg

Part C
Case Studies

The behaviors observed for all teachers were the primes and reinforcements delivered for child social peer interaction. The behaviors were observed on a 10 second sampling code. The definitions were the same as for the behaviors defined in the studies presented in Parts A and B. Also definitions of the training procedures were the same as those described earlier. Variations are described when appropriate. Similarly the population of teachers were the same - graduate or undergraduate students in Human Development courses at the University of Kansas.

Teacher SP

Training procedures: Viewing graphs of own and child's behaviors
Counting attention to target child's interaction
Viewing slides of peer interaction and discussing
opportunities for priming and reinforcing.

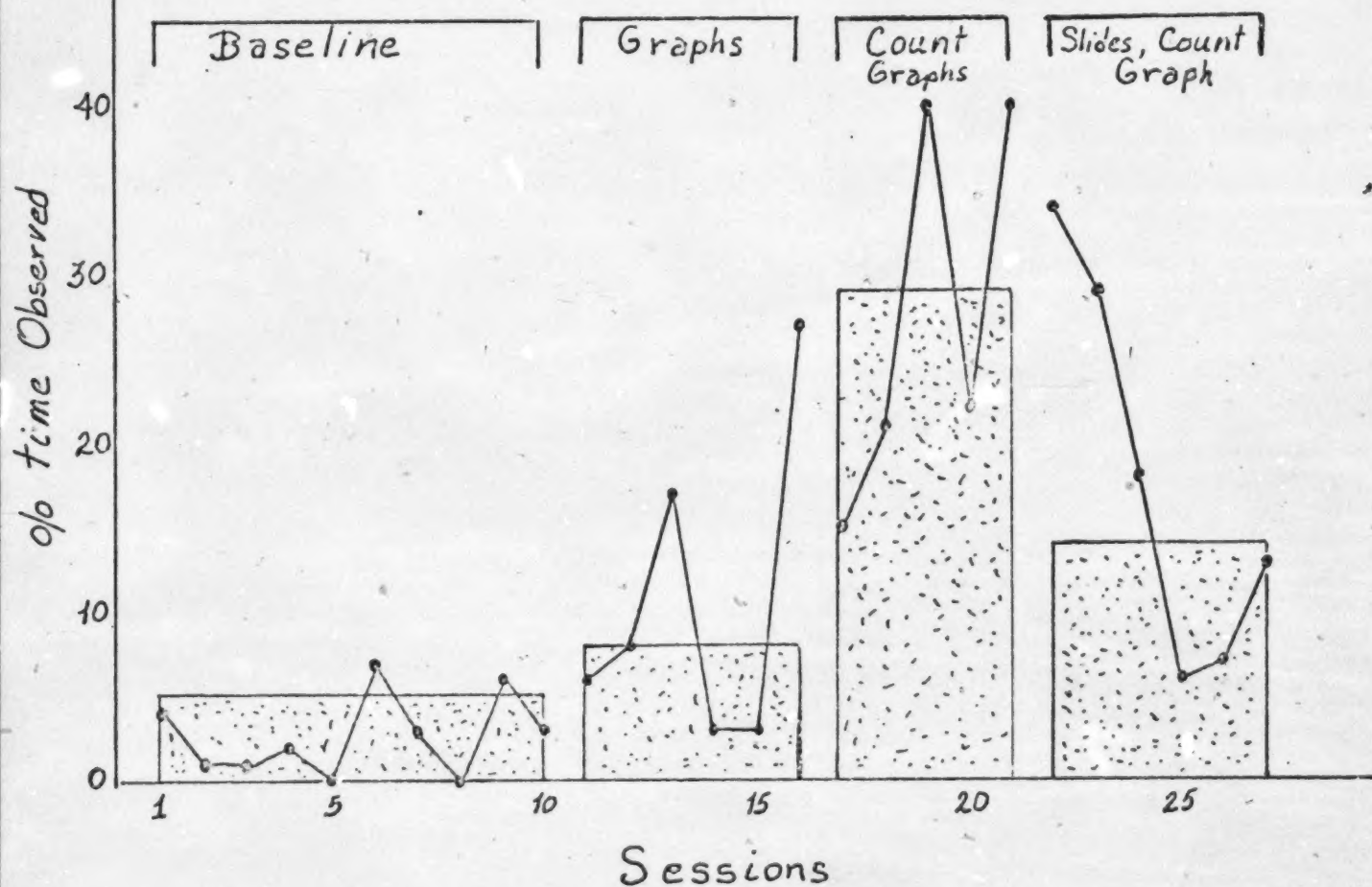
Results: This teacher was observed for a 10 day baseline during which time a target child was also observed alternately with the teacher every four minutes. Both teacher and child behaviors were judged to be low during this time. (See figure) On day 11, Teacher SP was given the definitions of priming and reinforcing child peer interaction. She was also shown the graph of her behaviors and of the target child behaviors. The instructions for days 11-16 were "do what you can to increase this child's social interaction" and look at the graph of the child and teacher behaviors after every teaching session. This condition saw a slight increase in both teacher and child behaviors. On day 17, Teacher SP began wearing a wrist or carrying a hand counter to count the number of primes and reinforcements delivered for child peer interaction. From day 18-27 the teacher counted only those behaviors directed toward the target child. She continued to see the graphs daily. These five days produced high rates of behavior for both the teacher and the child. Before day 24 Teacher SP

Primes & Reinforcement for Peer Interaction

Teacher SP

Reliability: 82%, 83%, 98%

mean Child Peer Interaction



viewed a series of 10 slides showing children in social interaction. With three other teachers she "brainstormed" about possible ways to prime or reinforce the child behavior. She continued to count and to see the graphs during this time. Both the teacher and child behaviors steadily declined for four days. While baseline levels were never reached and while the last two days were trending upward some other variable appeared to be controlling the teacher's behavior or child behavior. Perhaps the slide procedure should have continued (or never been introduced, since she was doing well anyway) when the downward points were observed. The short length of training time prevented more thorough analysis of the behaviors.

The target child's rate of inappropriate behavior was recorded throughout the study. There was a clear decrease in all inappropriate behavior and in inappropriate social behavior.

Teacher NJS

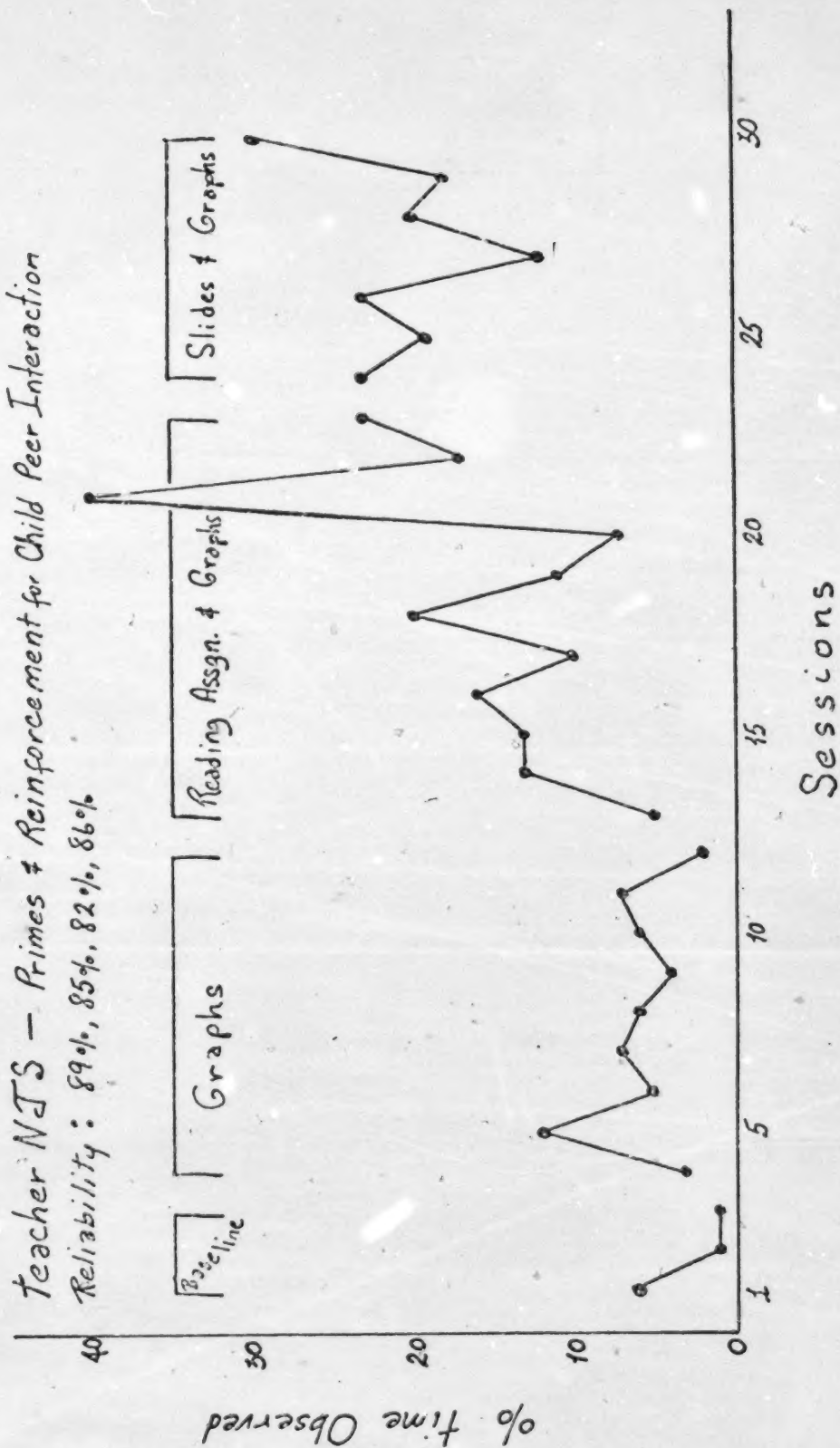
Training procedures: Viewing graphs daily

Reading assignment

Viewing slides of peer interaction and discussing opportunities for priming and reinforcing the behaviors.

Results: For three days Teacher NJS was observed with no particular instructions given to her. On day 4 (See figure) the definitions of the behaviors observed were given to her. At the same time she was shown the graphs of her baseline rates. She was instructed to look at the graphs daily at the end of the teaching session. Viewing graphs daily produced little change in the teacher behaviors. After day 11 Teacher NJS was given a book, How to be a Good Teacher by W. Sheppard, and asked to read it. She completed the reading on day 13. She continued to see her graphs. There was a steady increase in her behavior from day 13-23. Before class on day 24 she with three other teachers viewed 10 slides showing opportunities for teachers to prime and reinforce peer interaction. Together the teachers talked about what form the primes and reinforcements might take to be successful. This procedure was a suggestion of Teacher NJS. She continued to see her graphs. From day 24-30 Teacher NJS maintained a relatively stable and appropriate level of behavior - clearly above baseline.

Teacher NTS - Primes + Reinforcement for Child Peer Interaction
 Reliability: 89%, 85%, 82%, 86%



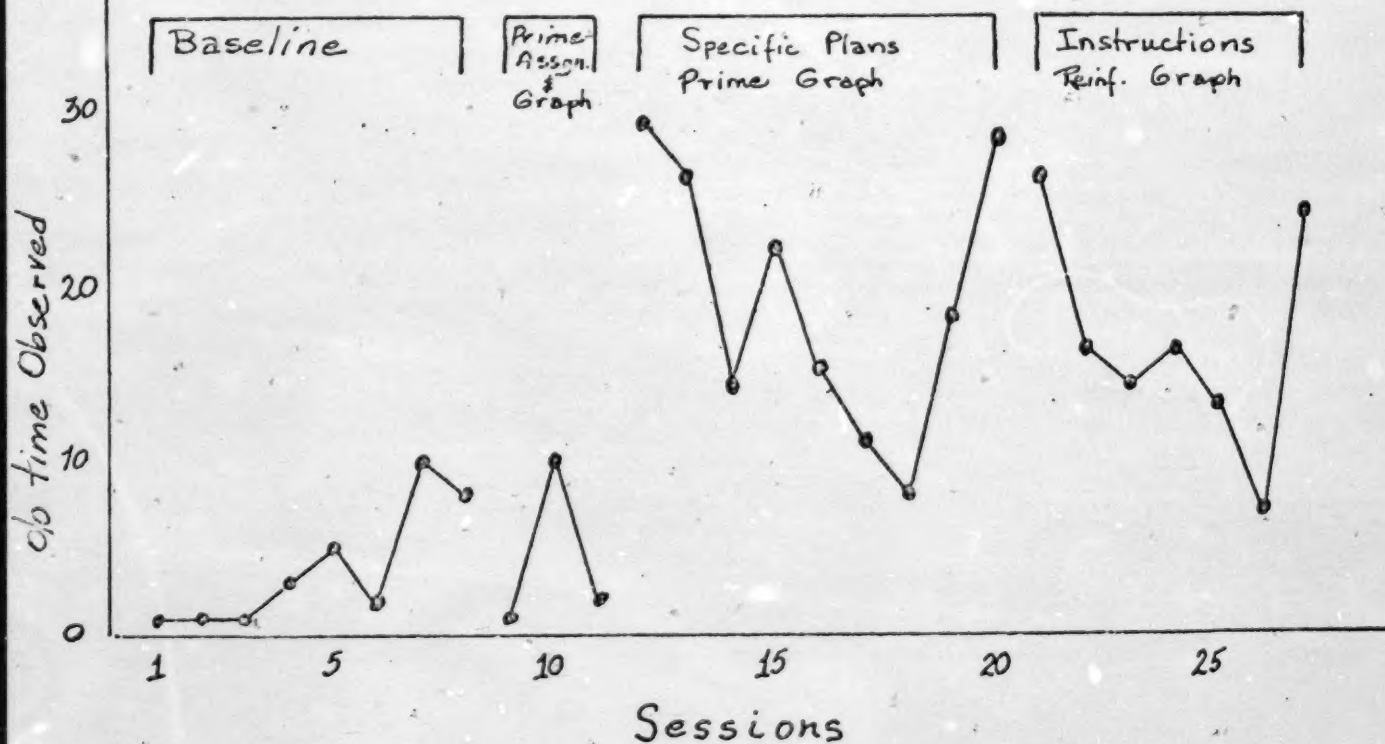
Teacher JH

Training procedures: Priming Assignment
Viewing own graphs
Writing specific lesson plans
Direct instructions

Results: Following baseline (days 1-8) Teacher JH was shown both her priming and reinforcement graphs and was given the priming assignment. (See figure) Three days of data showed little change in behavior so the teacher was asked to plan her activities to allow for child social peer interaction to occur and to look at her priming graph daily. Both behaviors clearly increased. At day 21 JH was asked to view her reinforcement graph and to follow up her successful primes with reinforcement. That is, when the child followed her request to interact with another child, the teacher then reinforced the two interacting. Her behavior maintained its high level to the end of the study.

For this teacher it is interesting to note the area of the room in which her behaviors occurred. For example, days 1-4 (baseline) were art activity days for her. Her low rate behavior during baseline changed to high rate on days 25-27 (post training) in the art area. Similarly days 9-11 were activities related to concepts. Her behavior increased in this area during the specific lesson plan training, days 17-20.

Teacher JH - Primes & Reinforcement for Child Peer Interaction
 Reliability: 90%, 82%, 85%



Teacher JF

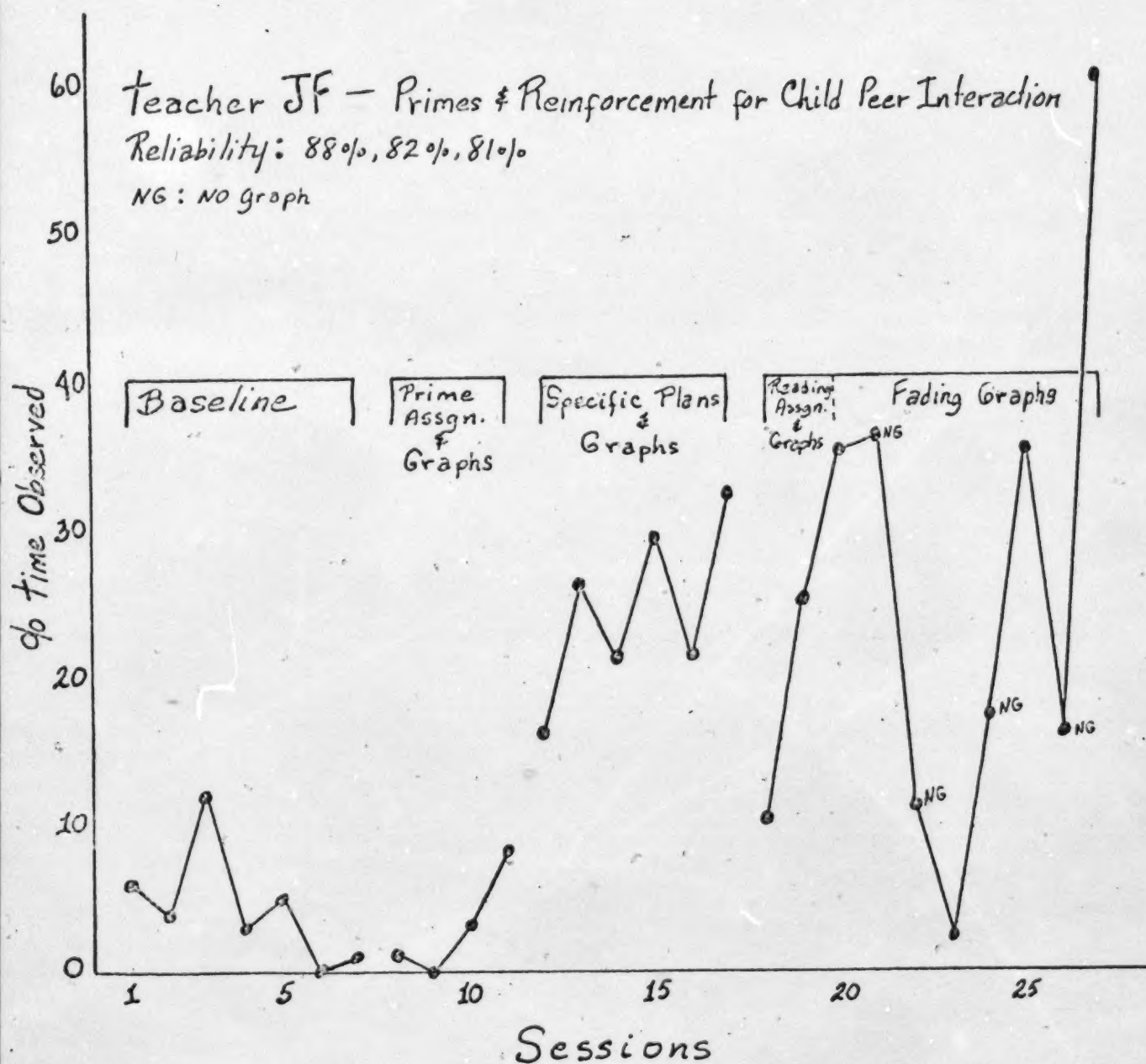
Training procedures: Written assignment

Viewing graphs

Writing specific lesson plans

Reading assignment

Results: After a seven day baseline, Teacher JF was given the priming assignment and was shown her graphs. (See figure) These procedures maintained her baseline and had little effect on the behaviors. On day 12 the teacher began planning activities to allow for peer interaction. This was the same procedure used with Teacher JH. As with Teacher JH an increase in behavior occurred and was maintained when a reading assignment related to developing peer interaction was given. From day 8 through day 20 the teacher was viewing her graphs daily. While this procedure resulted in little increase when it was introduced (days 8-11) there did appear to be a decline in behavior when the graphs were discontinued on days 21 and 22. The fading procedure of viewing graphs every other day appeared to recover the behavior rate.

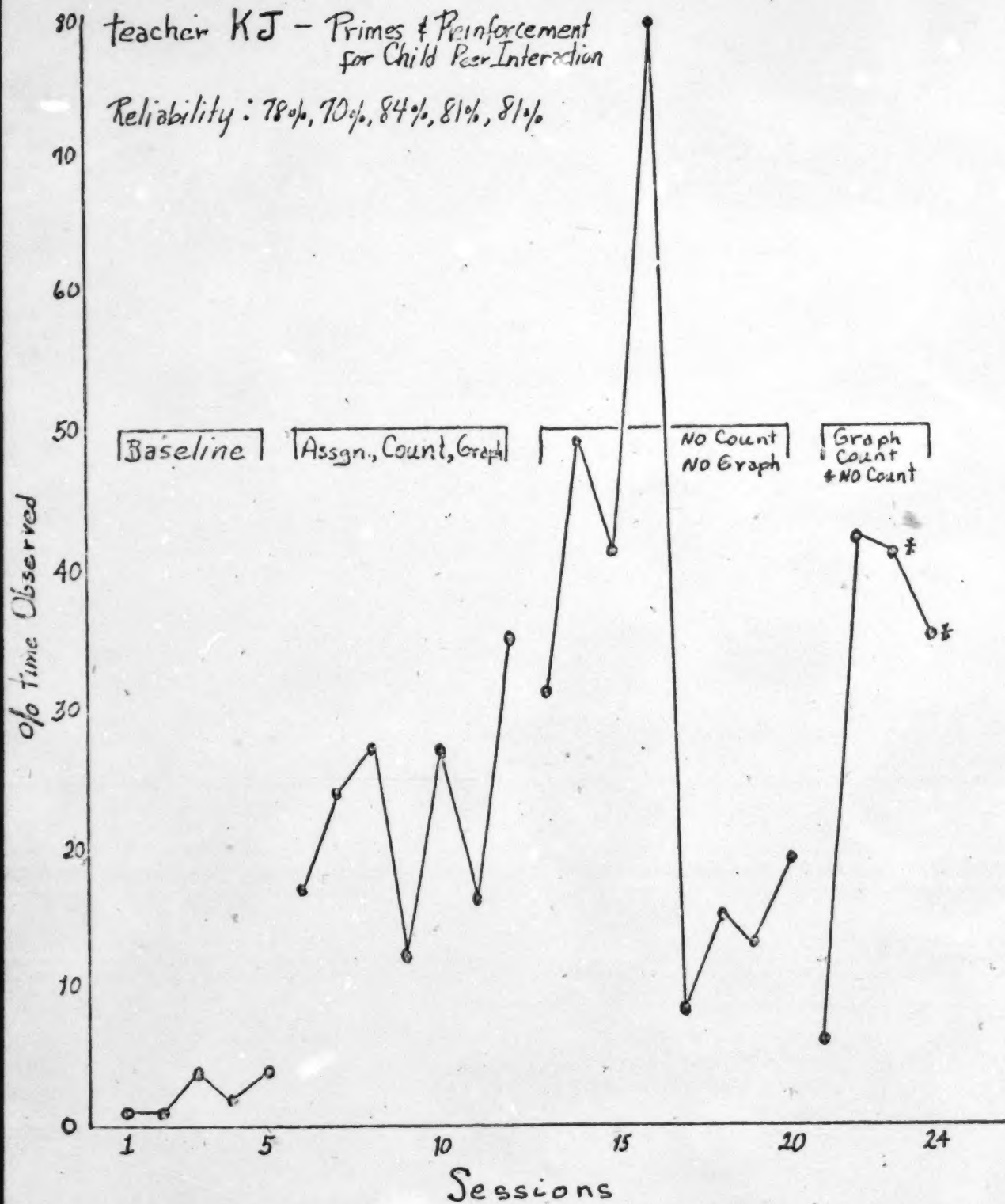


Teacher KJ

Training procedures: The three part package: written assignment
counting primes
viewing graphs daily

Results: After five days of baseline the three part training packing was introduced. (See figure) A clear increase in teacher behaviors occurred. Upon discontinuing the counting and viewing of graphs, the behaviors maintained for four days but then dropped drastically for four days. When the package was reinstated the behaviors again increased to rates of 35 per cent and above.

The training procedure did appear to have been responsible for the increase in teacher behaviors. The last two days the teacher saw her graphs only and did not count. The behaviors maintained. This teacher did express a dislike for the continued counting procedure and verbalized that it did interfere with her teaching at times.



Teacher CAM

Training procedures: Viewing Graphs

Reinforcement Assignment

Counting her reinforcement rate and graphing it

Writing specific lesson plans

Results: After seven days of baseline, Teacher CAM was shown her graphs and was given the reinforcement assignment. She began counting her reinforcements to children on day 12 and continued through day 21. The assignment and counting clearly increased her primes and reinforcements to peer interaction. After day 21, Teacher CAM began to write lesson plans to reinforce social behavior in the day's activities. This resulted in a continuing upward trend. At this point specific planning was discontinued and counting and graphs were continued. Teacher CAM's rate continued to rise. Apparently she was no longer dependent on planning specifically in order to continue attending to peer interaction. In light of this, the counting was discontinued on day 27 and Teacher CAM saw only her graphs. Under this condition her rate increased dramatically. It would appear that the package for Teacher CAM was effective in increasing her attention to child peer interaction to the point where she did not need the package to maintain her own behavior.

Teacher CAM - Primes + Reinforcement for Child Peer Interaction

Reliability: 80%, 85%, 90%

